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THE AMERICAN
JOURNAL OF PHARMACY

JUNE, 1919

EDITORIAL.

WHO WILL BE THE LEADER?

In connection with our editorial suggestion for the organization of a commission, to be composed of representative "Committees on Fraternal Relations" appointed by the national organizations of the several branches of the medical practice, whose special duty was to be the "regeneration of the medical practices" a reformation that would bring about a closer relation among them and a correlation of their services and the elimination of unethical practices and encroachments, the question has been propounded; Which of these national associations should take the lead in such a movement?

That the time is opportune is apparent. The need for the reform is conceded. The benefits accruing to the medical practices and the improvement in their services rendered to humanity thereby, cannot be gainsaid. The progress assured and the improved standing of the medical professions justifies immediate action.

If the suggestion be approved, if the inherent value of such a procedure be fully appreciated and the desire to test the feasibility of the plan be sincere, the mere question of who shall take the initiative becomes of secondary importance. Coöperation is the essential key note to the successful development of this ideal and coöperation must mean equal interest, equal support, equal sincerity, equal earnestness and enthusiasm of all of the branches of medical practice.

Medicine as the oldest of these established branches could with merited honor, take the lead through its powerful organization the American Medical Association. On the other hand the American Pharmaceutical Association, as the representative organization of

ethical pharmacy, could with no impropriety assume the responsibility of proposing such a reorganization of medical practices. The opportunity for the rendering of a truly altruistic service that will redound to the benefit of society and also to the advancement of the professions concerned, is presented and there should be no hesitancy on the part of the professions and the organizations representing them in organizing and promulgating such a movement.

G. M. B.

THE REPEAL OF THE LUXURY TAXES.

When Congress entered upon the preparation of the Revenue Law of 1918, the members were confronted by the necessity of raising enormous sums to carry on the war for a period variously estimated as from a few months to several years. Consequently, their attenion was directed to the imposing of excise and luxury taxes upon all sorts of articles, some of which had never before been considered by Congress as worthy of consideration for taxation. Although the armistice was signed at a date much earlier than was generally anticipated, the discussions in Congress and the various contentions and problems entering into consideration in the framing of a revenue law, had progressed to a point where entire reconsideration, in the uncertainty existing, was impractical and so in the Act, as passed finally in February, 1919, we find many inconsistencies and much that is to be criticised and some sections that will require amendment or repeal.

In the supposed exigency, the loyal people of the United States accepted the decisions of Congress and as a body have very generally met all demands and borne the burden of very unusual and heavy taxation. Now that the clouds of war are rolling by and peaceful skies spreading overhead and the trade winds of industrial and commercial activity and national progress blowing our way, conditions have undergone a radical change.

The time has come to take more sober thought, to pass more deliberate judgment upon what are proper articles to be selected for taxation. The evident intent was to select for special taxation articles which were considered as unnecessary, simply for adornment or self-indulgence, the consumption of which could be curtailed or a special tax paid by those who persisted in purchasing such finery and luxuries.

With this theory and purpose of the enactment we are finding no fault, but with the practical application and the selection of articles on which special taxes are levied, we are of the opinion that Congress committed many errors calling for criticism and the demand for prompt correction. We cannot believe that the exigency confronting Congress justified the placing of special taxes upon such articles as unfermented grape juice, carbonated waters, ice cream and soda-water, or upon medicines because held out by the manufacturers as remedies for any disease "affecting the human or animal body," or upon "toilet soaps" for maintaining a healthy bodily aspect, or upon petroleum jelly, hair restoratives, mouth washes and dentifrices, all of which play an important part in modern hygiene. Scientific sanitation considers many of these as necessary agents and their daily use as essential to the preservation of health.

The action of Congress in making such articles special objects for taxation places before contemporary nations, our friends and allies as well as our enemies, a condition of exigency and necessity that never existed in the United States and this false impression cannot be eradicated too soon. The sentiment is very pronounced that Congress erred in the placing of these so-called luxury and special excise taxes and the demand for their repeal is unmistakable and must receive the early consideration of that body.

In our opinion the excise taxes covered by Title IX with its various sections covering such a variety of articles as automobiles and accessories so essential to business, musical instruments, sporting materials, portable fans, thermos bottles, furs, boats, toilet soaps, carpets, trunks, wearing apparel, jewelry, etc., should be carefully revised to discriminate between such necessities as toilet soaps, to encourage the use of which no tax should be levied, and jewelry for adornment only. Moreover that section 628 taxes on carbonated waters and soft drinks; 630, that on ice-cream, sodas, sundaes, etc.; and 907, perfumes, toilet articles, petroleum jellies, hair preparations, mouth washes, dentifrices, proprietary medicines, etc., should be repealed in their entirety, and the sooner the better.

G. M. B.

THE COLLEGE COMMENCEMENTS AND THE PHARMACEUTICAL ASSOCIATIONS.

The passing of time has brought us once more to that period of the annual calendar that marks many events of pharmaceutic interest. In the early summer months the principal schools of pharmacy have their graduation exercises and these commencements note the entrance of new units into the service of pharmacy. About this season of the year, many of the state pharmaceutical associations, likewise, meet in annual convention, and the various sections and committees of the American Pharmaceutical Association are rejuvenated in anticipation of its sessions.

Someone inquires wherein is the relation of these events and the connection between these two subjects? There is a distinct link between these two different occasions and events pharmaceutic that should be so welded together as to form an inseparable interlocking.

The members of each graduating unit should be thoroughly imbued with the sense of the responsibility of the vocation in which they are about to enter and with loyalty to the traditions and precepts of the profession. The very first lesson that should be instilled into the mind of the young pharmacist is that he is engaging in a vocation of professional service to mankind. That the faithful discharge of this service will require continual study and acquaintance with the highest ideals which he will find only in associating himself with the leaders of his profession. Only by becoming a member of the pharmaceutical organizations will he keep in touch with these and learn that only by coöperative professional work is the best possible service achieved and also the greatest benefit accrued to the individual contributors.

The value of the associations, local, state and national, in the development of the individual pharmacist and the share of responsibility falling to each member of the calling should be impressed on the new graduate and at the very first meeting after graduation he should be initiated into membership and assume a part in such association work.

G. M. B.

SOME OF THE DEFECTS IN THE MANAGEMENT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

"Whatever thou hast to take, that take thou quickly;
Give quickly what thou hast to give; do quickly
The work thou hast to do; if thou delay
Time will drink up the spirit of thy act."

There is probably no desire so universally held by the pharmacists of America as that earnest wish to advance the welfare and progress of the American Pharmaceutical Association. The earnestness of our desire, the enthusiasm of our efforts, however, should not blind us to the errors that have become engrafted upon its methods. On the contrary, our concern for its interests and advancement fully justifies the calling of attention to defects the correction of which becomes necessary if our association is to fulfill its aims and objects. Love for an association that has bestowed upon the writer its highest honors and office has deterred and delayed public criticism for a long time, and coupled with this has been the fear that such criticism would be misunderstood or the motives actuating this be misconstrued. The world never has and never will love cowardice, either physical or moral, and the conviction has grown that duty demands that attention be directed to certain well-developed evils in order that reform may be accomplished.

The American Pharmaceutical Association, by reason of its composite membership, is in a position to combine and coördinate the best efforts of pharmacy in the attainment of any desired object and therein is the great opportunity of this organization to serve both the professional and commercial advancement of pharmacy.

If one read over the addresses of its presidents for only a limited period,—we will say of the last ten years,—he becomes cognizant of the many topics of vital importance to pharmacy that have been thus brought to the attention of the association. If he further follows up the consideration received and the action taken as set forth in the published proceedings of the meetings he will learn that in most of these matters the association has by *resolution* taken appropriate action or directed that certain duties and services to pharmacy should be performed by some one or by some committee. Then WHAT? Frequently *that is the end.*

A single example is cited, and this can be multiplied very many times in matters of material importance. Five years ago, the presidential address set forth that "The nation-wide adoption of a legal requirement that every pharmacist must be a graduate of a school of pharmacy before being licensed to practice, is the very first step essential for the professional elevation of pharmacy." "It remains as an initial duty of this association to see that this condition is changed and changed promptly." His recommendation that a committee be appointed to agitate this question and to procure in each state the enactment of a pre-requisite law, was endorsed by the Committee on President's Address and later approved by the association. It is not known that any further action has been taken and this important subject has lain dormant, buried in the graveyard of resolutions, while prominent members of the association have been writing lengthy epistles upon the lack of professional standing of pharmacy. One year of real, live, activity will outbalance a century of resolutions.

"To carry out an enterprise in words
Is easy, to accomplish it by acts
Is the sole test of man's capacity."

The causes of this lack of action and the consequent loss of opportunity and prestige are not hard to find, nor should they be difficult of correction. Delay, procrastination, are evident factors and the advice from the Code of Manu, quoted in the introductory paragraph is quite appropriate.

A structural weakness in the methods of the American Pharmaceutical Association is the absence of a plan that will provide for the continuity of its efforts. After a member has been elevated to the high office of president, he takes very much to heart the welfare of the association and makes a careful study of its plan and possibilities of service to the vocation of pharmacy and to the public. He prepares a well thought out address embodying his suggestions for improvements and changes, presides at a few meetings of the annual session and then passes the gavel of authority to his successor. His recommendations may have been favorably considered and approved by the few members present at the final session, there has not been provided, however, the adequate means for enforcing or putting these into accomplishments. His successor is likely to repeat the same course of procedure.

The machinery is rattling somewhere. It needs tightening up and adjustment and at least one new part. It should be made as a stated duty for the new president or else for the chairman of the council to see that there be established the lacking coördination and continuity of service that is essential to the success of its undertakings. With a multitude of committees and its numerous activities a strong guiding hand is needed that will insure continuous action and stop the delay and misspent energy. Either the power of the executive officer, the president, must be extended by the by-laws or an executive committee created with the necessary power.

G. M. B.

SECRET—PRIVATE—PERSONAL.

(No. II—Private.)

By John Uri Lloyd, Phar.M.,

Cincinnati, O.

Private.—Come, with this word, phases of definition in both pharmacy and medicine, apart from those recorded by almost any recognized authority. In this writer's opinion, the artificial construction localized in both the medical profession's code and the by-laws of the art of pharmacy needs be relieved from any touch of opprobrium when the word "private" is properly employed. Its use, as given by nearly every recognized authority, shatters no professional or commercial ideal that recognizes the right of anyone to a privilege in ambition's advancement of both self and others, in science, profession or art.

The "odium" attached to the word *private* in both medicine and pharmacy is well deserved from one view, *i. e.*, when it concerns the impostor, and in this direction should not be abandoned. But no authority, whether independently legal, ethical or lexicographical, attaches to the word a blanket stigma.

Note a few definitions of the word, as recorded by Webster:

Private a.—Belonging to, or concerning, an individual person, company, or interest; peculiar to one's self; unconnected with others. personal; one's

own; not public; not general; separate; as, a man's private opinion; private property; a private purse; private expenses or interests; a private secretary.

Not publicly known; secret; as, a private negotiation; a private understanding.

Private, n.—A secret message; a personal unofficial communication.

In private, secretly; not openly or publicly.

To apply these, fairly, to pharmacy or to medicine shocks no ethical sensibility, if claims for "occult" superiority or unwarrantable pretensions be avoided. A physician is warranted in having *private* opinions concerning therapeutic problems, and, so far as this writer can perceive, he has a right either to maintain them in his own practice or announce them by open discussion, as he personally elects. But to herald to the world unwarranted claims for possession of exceptional qualifications is as improper as for a bank to announce the possession of capital that does not exist. To each the common law of ethics alike applies—the word private is debased if complicated with falsehood.

It may be forcibly argued that the profession of medicine is a humanitarian cult, that of the banker, materialistic; that the physician is not in general business and has no right to anything private, regardless of personal needs or professional opportunities. To this some might answer, the establishing of a personal conspicuity that makes self-deputation, is in itself a personal *business* service; that the physician who makes a superior reputation either in diagnosing a class of ailments, or in the treatment thereof and announces the fact, brings to himself the return of merit from other afflicted persons, who prefer to trust the successful *originator,* even though the process of treatment and the agents employed are by him broadly published. It might be argued that the more widely a surgeon publishes his processes and reports successes, disclaiming anything private, the more cosmopolitan becomes his personal opportunity.

Publicity means *business.* Again, one might argue, as concerns the public's responsibilities to a benefactor, that it is sophistry to attempt to draw a distinction between the iron-monger who serves the people and profits thereby, and the physician who likewise devotes to them his care and thought, taking a fee therefor. If the iron-monger succeeds in accomplishing something of general value, through private or patented processes, the people, including physicians and surgeons, pay the bill. In like manner, if the physician or surgeon makes discoveries that are valuable, he should be financially

recompensed, if publicity for the general good is accorded. In such views as these, each party to the discussion may in all fairness take a part.

However, most insidious, often approaching sophistry, are such arguments, carried to the extreme, in some of their ethical, as well as material outreaches. That physicians or surgeons should be required to publish the details and results of every operation or diagnosis, is not acceptable to some persons. That *privacy* is occasionally a right of everyone, and especially in such as this, is a self-evident, ethical axiom. To announce openly, much less publish, the closet discussions of a called consultation of physicians, or surgeons, might do much harm. *Privacy* such as this seems to be a sacred trust; likewise, privacy concerning the diseases from which some persons suffer.

Turn now to the pharmacist who in *business* has no professional fee, but who joins hand with the physician in his contribution to humanity's welfare. Might one not argue that, on ethical grounds, no one should deprive him of rights accorded in common law to other business men, or expect from him greater contributions to humanity than come from others dependent on scientific art for a livelihood? Might one not ask, should he not have the fullest self-privilege and protection, by reason of his personal (*private*) *efforts* to excel? Might it not be asked, is not the accomplished pharmacist entitled to even greater *personal* privileges than others? Is he not an educated man and yet dependent wholly on the materialistic side of his profession or art for his opportunity to serve the people? Is not the pharmacist who devotes his early youth to pharmaceutical *education,* who in later years spends his money, often the savings of a lifetime, to the limit in acquiring knowledge, confronted with competitors no less unworthy than the charlatan who discredits the term physician? Why should anyone deny him the returns that he has earned, and that cannot in some instances come unless he keeps *in private,* details that the charlatan neighbor has not acquired? In this line, *is not knowledge property?* Might it not be argued that one of the reasons why young people take a pharmaceutical education or spend time and money in research, is to enable them to become superior in their art? Is not every qualified pharmacist, be he young or old, who has by sacrifice earned his privilege to the position, surrounded by competitors with larger signboards over

their doors, whose advertisements to the public are such as he is, as a rule, ethically denied.

Summing it up from this angle it might be argued that *private* processes earned by educational accomplishments by a legitimate pharmacist (even the method of compounding a "face lotion" or an elastic pill) take nothing from others, and that neither law nor justice would demand that a pharmacist deny himself the privilege of fair business returns through such *privacy*. Does not this view prevail throughout the length and breadth of the land, in the judgment of the public generally, and is it not also most generously accepted by the practicing members of the profession of medicine? The physician naturally, as he should, recognizes the fairly-earned *art* of the qualified apothecary, that gives him an individuality. He comprehends that this man of many sacrifices has earned the right to the moderate materialisic return that comes from a superiority bred by self-effort. He gladly gives to him his professional confidence, and considers it his privilege to recognize merit earned by educational sacrifice. He comprehends that the operating pharmacist is not a recompensed teacher of others; that no professional fees, paid for professional services, are his part; that his duty to the world is best accomplished in continued private efforts, the material results of which he can apply to self-service or freely give to the world, as he so desires.

And—this writer also believes that the aim of the faculty of every college of pharmacy is so to instruct the students that they may have this superior advantage and that their after-lives may thus be made less irksome. They comprehend that the pharmacist is of all others a laborer of great responsibility, and that to him who thus serves others, with little recompense at the best, applies the Scriptural injunction, "The laborer is worthy of his hire."

But—and this writer uses now the first person, so his own position be not misunderstood—no pharmacist, if he so desires, should be denied the privilege of *instructing* others, even to the wrecking of his *private* interests. In this I go even further; the *art* of pharmacy, the prosperity of the pharmacists of America, both dispensing and manufacturing, rest largely upon sacrifices made of *private* opportunities, by teaching pharmacists of the olden time; self-sacrificing pharmacists, who, in the privacy of their shops and homes, toiled, accomplished, gave and taught. The names of a great number come

now to memory. The faces of these exemplary men rise successively before my eyes, as I pen these lines. And also come, unbidden, the faces of not less sacrificing, not less modest pharmacists, who today are worthily utilizing, for the benefit of others, the wealth handed down to them as a sacred trust. And yet, I believe that such processes are *privileges*. That if an apothecary makes a discovery that benefits humanity it is often a *duty* to utilize it to the financial advantage of his family and himself, and that no law of just ethics can demand that he give such property, without recompense, either to his competitors or to the world at large.

THE COLLECTION AND SOME USES OF THE OLEORESIN OF DOUGLAS FIR (OREGON FIR BALSAM, DOUGLAS FIR TURPENTINE).

By S. A. Mahood,

Chemist in Forest Products, Forest Products Laboratory, U. S. Forest Service, Madison, Wisconsin.

While the oleoresin of Douglas fir (*Pseudotsuga taxifolia*) is the chief, if not the only, constituent of an article of commerce regularly listed under the name of Oregon fir balsam, there is but little information available on the methods employed in collecting this material. The facts at hand or obtained from those familiar with the gathering of this product indicate that the oleoresin is obtained in one of two ways.

Draining Method in Lumbering Operations.

One of these methods consists in having buckets or other suitable receptacles where logging operations are being carried on and in allowing the oleoresin which exudes from some trees when they are felled to drain into one of these vessels.

Cruiser Method Based on Spotting Trees.

The other method is used by those who make a business of collecting this material. A wind shake in a standing tree produces a pocket which in time fills with oleoresin, and, if an aperture is made in the pocket, the oleoresin readily flows out. These professional

collectors travel through the woods until they "spot" a tree having a cavity containing oleoresin. A hole is bored into it and the pocket drained, the oleoresin being conveyed by means of a tube into suitable containers. From one to three gallons are frequently obtained from a single boring. There is very little, if any, evidence that a given tree contains such a pocket, but those who make a livelihood as collectors claim to be able to "spot" such trees and they meet with a fair degree of success. It is apparent, however, that there is the element of chance in such a method and the collectors often go a whole day without making a single productive tap.

It is evident from the foregoing that the methods of collecting this material might possibly be improved. It might be supposed that the oleoresin could be obtained by chipping the tree according to the method employed in the South for obtaining ordinary crude turpentine. This method, however, when applied to Douglas fir, gives very little resinous material.

Since the oleoresin tends to collect in pockets formed by accident inside the tree, it seems reasonable to suppose it would also tend to collect in pockets formed by design. In other words, the method employed on the slopes of the Alps for obtaining Venice or Larch turpentine might presumably be applied to advantage in securing Douglas fir turpentine.

European Method a System of Tapping.

This method[2] is based on the fact that in the European larch the oleoresin tends to collect in the heart of the tree[3] and that it often fills the cavities made in the trunk by frost or other causes. One or two holes, 1 to 1½ inches in diameter and horizontal or nearly so, are bored by means of an auger early in the spring in mature trees about forty inches in girth. They extend to the center of the tree and are about a foot from the ground. The holes are carefully cleaned and then closed with a dry larch plug to prevent loss by evaporation. In the autumn the cavities are emptied by means of an auger. After the second or third collection, the holes are widened to 1.6 inches. In some sections the holes are not plugged, but wooden tubes are inserted in the openings and the oleoresin allowed

[2] "Die Osterreicheschen Alpenlander und ihre Foreste," page 369; *Archiv. der Pharmacie* (1900), page 389.

[3] *Botanische Zeitung*, 17, pages 329 and 377.

to flow through them into suitable receptacles.[4] The production once begun entails little labor and the product obtained is quite pure. The trunk of the tree is injured but little and the same cavities are said to yield oleoresin for twenty[5] to fifty[6] years.

Combined Cruiser and Tapping System.

The European method might be used to advantage in combination with the "cruiser method" mentioned above by plugging the tap from which no oleoresin flows immediately and draining the tap the following season or sooner if the accumulation of oleoresin takes place rapidly enough. The labor involved in making the tap would not then be entirely lost. Instead of being plugged, the tap might be connected to some suitable container and allowed to drain for a given period. In that case care should be taken through the use of a closed vessel to prevent loss from evaporation. In addition to living trees, the stumps of recently felled trees may often be tapped to advantage.

Commercial Uses of Oleoresins.

The demand for Oregon fir balsam seems to be on the increase, as indicated by the present (February 1, 1919) market price of $1.75 to $1.80 per gallon, as compared with $1.15 to $1.25 some time ago. This increase in price has been the result of increased domestic demands, as there has been little, if any, export trade in this article since the beginning of the war. The domestic consumption is on the increase and this is due apparently to a greater use of this material, particularly by the varnish trade. Oregon fir balsam is also being used to some extent as a substitute for Venice turpentine, a purpose for which, under the name of Douglas fir turpentine, it was suggested by the Forest Products Laboratory about two years ago. As such it is employed particularly in the ceramics industry and in the manufacture of porous plasters.

In addition to these uses, it is probably employed to some extent also in the place of Canada balsam. The term "balsam," however, as applied to both of these articles, is a misnomer, since they are not balsams but turpentines. Oregon fir balsam has been regarded

[4] Duhamel, "Traite des Arbres," II, page 355.

[5] Tschirch, "Die Harze und die Harzbehalter" (1906), page 614.

[6] G. Planchon et E. Collin, "Les Drogues simples d'origine Vegetable," 1, page 70.

View of larch tree tapped for Oleoresin according to the European method.

with suspicion as a substitute for Canada balsam, especially since the publication of an article by Dowzard[7] purporting to show that Oregan balsam is a fictitious article "made by dissolving colophony in turpentine." He regards the acid number of the resin (non-volatile residue) as indicating that Oregon balsam contains colophony, since the two values are:

Oregon fir balsam resin	153
Colophony	155

More recent work by Rabak[8] on commercial samples and of Schorger[9] on authentic samples of Oregon fir balsam show the acid values of the resins (non-volatile residues) to be practically the same. The former obtained an average value of 153 (calculated basis of 70 per cent. resin) and the latter of 166 (calculated). It follows, therefore, that a high acid value for the resin does not show Oregon fir balsam to be a spurious product as assumed by Dowzard. On the other hand, it apparently does differentiate Oregon fir balsam from Canada balsam. The constituents of these two products, so far as they have been determined are, however, quite similar, and it is probable that in practice Oregon fir balsam will, in many cases, serve the purpose quite as well as Canada balsam and at about one sixth the cost.

United States Department of Agriculture,
Forest Service, Forest Products Laboratory,
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THE PHARMACY AND MANNER OF USE OF TETHELIN.

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Tethelin is a substance partaking of the nature of a lipoid, derived from the anterior lobe of the pituitary body, and was first isolated by T. Brailsford Robertson, Ph.D., D.Sc., in 1916. It has been suggested by Robertson[1] as being the growth-controlling principle of the anterior lobe of the pituitary body.

[7] *Chemist and Druggist* (1904), page 64; Allen, "Commercial Organic Analysis," IV, 79 (note).

[8] *Pharmaceutical Review* (1904), 22, 293.

[9] *Journal American Chemical Society* (1917), 39, 1040.

[1] Robertson, T. B., *Jour. Biolog. Chem.*, 1916, XXIV, 397, 421.

Object of this Paper.

Tethelin is an extremely sensitive substance; even the moisture attracted to it by reason of its hygroscopicity results in active decomposition. Air alone is capable of bringing about decomposition of tethelin because tethelin is quite prone to oxidation. Therefore, in dispensing and using tethelin certain precautions must be carefully observed.

The object of this paper is to point out the chemical characteristics of tethelin in so far as they demand the employment of particular precautions in dispensing and using this sensitive substance, and in addition, to point out the manner in which this substance has been employed.

Pharmacologic Action and Manner of Use.

Three of the lipoids especially concerned in the process of growth are cholesterin, lecithin and tethelin. Cholesterin and lecithin have been extensively studied. We are indebted to Robertson for the researches which have resulted in developing our knowledge of tethelin as a powerful agent in influencing the process of growth in the animal body. It apparently retards growth when administered to animals before the age of adolescence and accelerates growth in the post-adolescent period.[2] It increases the rate of growth of the Flexner-Jobling carcinoma in rats in the same way as the whole anterior lobe tissue.[3]

The effect of tethelin in the process of the repair of tissue was studied by Robertson by experiments on wounded mice. The tethelin was administered hypodermically and showed a stimulating action on tissue repair.[4]

Barney[5] states that "no work has yet been published on the effect of tethelin as an accelerator of repair in cases of delayed union of fractures; but, reasoning from the basis that acromegaly is caused by a hypersecretion of the anterior lobe of the pituitary, it would appear that tethelin would have a very great value in certain cases of delayed union, and may we not anticipate less tedious results on

[2] Robertson, T. B., *Jour. Biolog. Chem.*, 1916, XXIV, 397.

[3] Robertson, T. B., and Theo. C. Burnett, *Jour. Exper. Medicine*, XXIII, 1916, p. 631.

[4] Robertson, T. B., *Jour. Med. Assoc.*, LXVI, 1916, p. 1009.

[5] Barney, E. L., M.S., M.D., *Jour. Lab. and Clin. Med.*, Vol. III, No. 8, May, 1918.

the various forms of skin grafting, also in treating gastric ulcers, and in fact almost all epithelial lesions tending to chronicity?"

Cases of ulcer treated in the Out-Patient Department of the University of California Medical School, by Barney, are reported in his paper from which the above quotation was taken. Applications of gauze, wet with a solution of 100 Mgm. of tethelin in 5 Cc. of sterile distilled water were made and this was followed by dusting the ulcerated surface with 100 Mgm. of powdered tethelin. The tethelin was used in conjunction with the regular surgical procedures indicated in each case. Subcutaneous injections of tethelin were given beneath the ulcer in certain instances or injected along the margin. In other cases lanolin, medicated with tethelin was used. In all of these cases the improvement was sufficiently marked to warrant the opinion that the excellent results might probably be ascribed to the tethelin applications. These results could not be attributed to the regular surgical treatment of the cases for the reason that the improvement was not marked until after the tethelin applications had been made.

Since tethelin is a fatty substance and readily hydrolyzed by alkalies, it is probably partially decomposed in the intestine by the alkaline juices and also probably by the pancreatic lipase. A large part of the tethelin administered by mouth is therefore in all probability wasted.[6]

As a consequence, treatment by mouth is not to be depended upon, except as an adjunct to the hypodermic use of the substance.

The experimental work of C. L. A. Schmidt[7] has shown that tethelin is non-toxic and non-antigenic, hence it should be therapeutically without danger to the patient.

Robertson and Ray[8] found by experiments upon mice that the onset of senescence in tethelin-fed animals was markedly deferred and that the spontaneous origin of carcinoma, which is essentially a disease which accompanies a measure of senescence, suffered more than proportionate delay, as a consequence. Even more marked than the delay in its growth in the incidence of carcinoma was the delay in its growth in the tethelin-fed animals. In inoculated carcinoma, the administration of tethelin caused marked acceleration of the growth.

[6] Robertson, T. B., "Endocrinology," 1917, I, p. 34.

[7] Schmidt, Carl L. S., Ph.D., *Jour. Lab. and Clin. Medicine*, 1917, II, 711.

[8] Robertson, T. B., and L. A. Ray, *Journ. Biolog. Chemistry*, 1919, XXXVII, p. 446.

The belief was later expressed by Robertson and Ray[9] that the direct action of tethelin appeared to consist of retardation of growth, and that the later acceleration is due to compensatory factors which develop in the animal itself in response to the abnormal dosage of the active principle of the anterior lobe of the pituitary body.

They preferred this view for the reason that the compensatory acceleration was more intense when the retarding factor, tethelin, was discontinued after the twelfth week of age of the mice and the eighth week of the administration. Finally they presented two possibilities to explain the effect of tethelin upon the healing of superficial wounds and upon the growth of inoculated carcinoma, namely, that tethelin accelerates the growth of the epithelial tissues and directly or indirectly retards the growth of the other and collectively more bulky tissues, or that tethelin retards the growth of all tissues, but indirectly accelerates the growth of epithelial tissues in situ by disproportionately retarding the growth of other tissues and thus favoring the epithelial tissue in the competition for nutritive materials.

Physical and Chemical Characteristics.

Tethelin is a white or pale cream-colored substance, which is readily powdered. It rapidly absorbs aqueous vapor when exposed to damp air and becomes moist and darkens in color.

A combination of air and moisture results in active decomposition of tethelin, the tethelin becoming damp and dark in color and suffering a lowering of its iodine-absorption power.[10]

When heated, tethelin begins to darken at a temperature lying between 100 and 110° C., and when heated to still higher temperatures, the substance progressively darkens and softens as the temperature rises.

Heat is particularly active in bringing about decomposition of tethelin, particularly in access of air and moisture.[11]

Tethelin is soluble in water to the extent of 5 per cent., forming at that concentration a brown, turbid solution. More dilute solutions are paler in color and 1 per cent. solutions are but slightly opalescent. Aqueous solutions of tethelin have a greasy odor, somewhat resembling brain tissue.

[9] Robertson, T. B., and L. A. Ray, *Journ. Biolog. Chemistry*, 1919, XXXVII, p. 456.

[10] Robertson, T. B., *Jour. Biolog. Chem.*, 1916, XXIV, p. 415.

[11] Robertson, T. B., *Calif. State Jour. Med.*, Dec., 1917.

Aqueous solutions of tethelin are faintly acid in reaction.

Tethelin is soluble in ethyl alcohol and to a less extent in ethyl ether, the solutions in ether being marked by opalescence at high dilutions. It is also soluble in chloroform and in carbon tetrachloride. It is insoluble in a mixture of one part by volume of absolute ethyl alcohol and one and one half parts of dry ether.[12]

When ignited until free from carbon, tethelin yields a few per cent. of ash.

The exact chemical nature and structural formula of tethelin have not as yet been thoroughly established. It partakes of the nature of a lipoid. It is capable of being saponified by alkalies and possesses iodine-absorption properties. It contains phosphorus and nitrogen. Part of the nitrogen is in the amino form. The proportion of amino nitrogen is increased after hydrolysis by barium hydroxide. Among the products yielded by hydrolysis with barium hydroxide followed by hydrolysis with dilute sulphuric acid, is inosite. The presence of both phosphorus and inosite in tethelin is of great interest in view of the presence of "phytin" (inosite-hexaphosphoric acid) in the rapidly growing parts of plants and in milk, and its probable importance in connection with the growth of tissues. Tethelin probably contains an iminozolyl group and to this extent may be regarded as being related to the physiologically active substances of the posterior lobe of the pituitary body. It does not, however, possess the characteristic physiological activity of these substances.[13]

Precautions to be Observed in Dispensing Tethelin.

Tethelin in dry form should at all times be preserved in a sealed glass tube in which a vacuum has been created. It is extremely hygroscopic, the moisture of the air being readily absorbed by it and thereby lowering its activity in proportion to the quantity of moisture absorbed.

In addition it is also extremely prone to oxidation upon exposure to air. Robertson advocates the use of vacuum tubes which contain 100 Mgm., since this is the quantity which is generally accepted as being satisfactory for use at one time.

It is most desirable that the whole of the contents of a tube of tethelin be employed when the tube is opened and that, under no

[12] Robertson, T. B., *Jour. Biolog. Chem.*, 1916, XXIV, p. 411.

[13] Robertson, T. B., *Jour. Biolog. Chem.*, 1916, XXIV, pp. 409–421.

circumstances, the residue left after partial use of the contents of a tube be used, if it has been exposed to the air for some time and has become moist and dark in color.

Because of hygroscopicity and proneness to oxidation, tethelin should not be dispensed in capsules or tablet form, without special means being taken to protect the products from air and moisture, except for the most extemporaneous use.

The Manufacture of Sterile Preparations of Tethelin.

Dry tethelin withstands a temperature of 80° C. without apparent change in physical appearance, but begins to darken between 100 and 110° C. It will thus be evident that this substance is quite sensitive to the degree of heat commonly employed in sterilization. Dry tethelin can be prepared in a final sterile condition only by the exercise of the utmost care in maintaining sterile conditions throughout the process of manufacture and placing the finished product through a thorough sterilizing process under carefully regulated temperature which is not allowed to rise above 80° C. Sterility tests on the final product are absolutely essential in order to obtain positive assurance of its safety for hypodermic use.

Sterilization of tethelin in the dry form should never be attempted at a temperature above 80° C. As supplied in tubes, tethelin is sterile as proven by actual bacteriological tests. If extra sterilization is desired, the most safe and satisfactory method is to place the tube in boiling alcohol, the alcohol being boiled by means of a steam bath or an electric stove, and not over a naked flame.

Heated water as a bath should not be employed for the sterilization of tethelin unless convenient means are available to regulate the temperature of 80° C., since if the temperature is permitted to mount near to the boiling point of water, the substance will soften and darken and become decomposed, to some extent.

Heat is particularly active in bringing about decomposition of tethelin, particularly in access of air and moisture. For this reason, no attempt must be made to sterilize solutions of tethelin by heating them in contact with air. The proper method of preparing sterile solutions of this substance is to add the sterile powdered tethelin directly from its tube to recently sterilized and cooled water contained in a sterile glass vessel. The tethelin dissolves immediately upon slight agitation of the mixture and is then ready to be drawn directly into a sterile hypodermic syringe.

Tethelin normally forms a turbid solution with water, therefore no attempt should be made to filter the solution perfectly clear. Extraneous particles of foreign matter such as fibers, particles of dust, glass, etc., which may accidentally find their way into a solution, while it is in process of preparation, may, of course, be removed by rapid filtration of the solution under perfectly sterile conditions. It is, however, quite unnecessary to labor to attain a perfectly clear filtrate, before use. The same care must be exercised in regard to sterility, in preparing a solution for local use as for hypodermic use. Aqueous solutions of tethelin are faintly acid in reaction. The acidity of tethelin is one of its chemical characteristics and is so slight as to have no corrosive effect whatever upon metallic hypodermic syringes.

Schmidt[14] found that *B. coli* and *B. proteus* could grow in a medium containing 1 per cent. of tethelin and a trace of salt.

A quantity of tethelin in a semi-dry state which was contributing to the growth of *B. Hay* has come under my observation.

The fact that a solution of tethelin is a culture medium for certain bacteria indicates the necessity of employing only freshly sterilized and cooled distilled water in the manufacture of its solutions. The same is true of any other liquid or semi-liquid vehicles as might be employed, such as ointment bases for the manufacture of ointments of tethelin. These bases should be rendered sterile at 100° C., and should be cooled before the tethelin is incorporated.

Tethelin solutions and any extemporaneous preparations of tethelin must be freshly prepared and not kept as stock solutions or preparations. The difficulties of keeping stock solutions and stock preparations of tethelin sterile under the conditions usually obtainable outside of a bacteriological laboratory are quite insurmountable because of the extreme readiness with which certain microörganisms make use of tethelin for their growth.

Precautions to be Observed in Using Tethelin.

Tethelin is lipoid in nature and as a consequence is subject to hydrolysis in the presence of alkaline substances. For this reason, it is not advisable to employ it in admixture with such more or less alkaline wound dressings as neutral sodium oleate, soaps, sodium phenolate, calamine, zinc oxide, ichthyol, sodium hypochlorite, sodium

[14] Schmidt, Carl L. S., Ph.D., *Jour. Lab. and Clin. Medicine*, 1917, II, p. 717.

borate, sodium bicarbonate, carron oil, etc. It is also not advisable to employ it locally following the use of any of these substances until the wound has been freed from them. Hypodermic use of tethelin is indicated during the period of local use of any of these more or less alkaline substances.

By virtue of its lipoid nature, tethelin possesses considerable iodine-absorption power. For this reason, it is not advisable to employ it in admixture with dusting powders, liquids, ointments or other preparations which contain free iodine or which are capable of liberating free iodine when used on a wound. It also is not advisable to use it locally, following the employment of any of these substances until the wound has been freed from them. The use of tethelin, hypodermically, is indicated during the period that any of these free-iodine-bearing or free-iodine-generating substances are being employed locally.

Tethelin in any form must not be permitted to come into contact with substances possessing oxidizing properties. Some such substances are sodium hypochlorite, potassium permanganate, ferric chloride, peroxides, chlorates, bismuth subnitrate, carron oil, ozonized oils, iodized oils, etc. When such substances are being employed locally, it is advisable to postpone the local use of tethelin until the wound has been freed from them. Hypodermic use of tethelin is indicated during the time over which such oxidizing substances are being employed locally.

Summary.

Tethelin is suggested as being the growth-controlling principle of the anterior lobe of the pituitary body.

It has been employed hypodermically in solution form; locally in solution, as a dusting powder and in ointment form and by mouth.

It partakes of the nature of a lipoid.

It is an extremely sensitive substance, even air and moisture causing active decomposition.

Extemporaneous preparations made under the usual pharmaceutical conditions should be employed as soon after manufacture as possible and not stocked.

Tethelin in the dry form and in solution form must not be heated above 80° C.

Tethelin in solution form must not be sterilized by boiling in the air.

Sterile tethelin solution can be prepared by adding sterile tethelin to cooled sterile water.

It is not advisable to employ tethelin in admixture with oxidizing or alkaline substances or substances containing free iodine or which are capable of generating free iodine.

Hypodermic use of tethelin appears to yield the maximum activity of the substance.

Because of the extreme sensitiveness of tethelin to moisture, air, common wound dressings and digestive ferments and because of the exposure to these agents to which tethelin is subjected when employed by mouth or locally in any form, its use locally or by mouth is to be recommended only as an adjunct to its hypodermic use.

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THE RAW MATERIAL SITUATION.[1]

BY CHRISTIAN BEILSTEIN.

I had the privilege of addressing last year's convention of your association on the same subject your committee has requested me to discuss today—the raw material situation. In the meantime a great deal of water has passed under the bridge, but I confess frankly that if it seemed difficult then to attempt to forecast the immediate future, it is little if any less so now. A year ago the answer to the question, What about the future? was apt to be, Tell me how long the war is going to last and I will tell you what I think will happen after it is over. Well, the war came to an end rather suddenly about six months ago, if we may believe all we are told, but the perplexities of business did not end with it by any means—they merely changed about after the manner of the kaleidoscope; and what lies beyond the mists just ahead is still a matter largely of conjecture. I think however that from our experiences since last fall, we can draw a few conclusions which will be both safe and of some practical value, and one or two of these seem to be directly in point of our subject.

As we all know, one of the conspicuous commercial develop-

ments of the war period was a tremendous and almost universal advance in prices, brought about chiefly by scarcity of materials and increased cost of production and transportation. Many of the products you are constantly using went up to from 5 to 25 times their normal values. Some finally disappeared entirely, while others were kept in limited supply by provisional domestic manufacture, which had become possible only because of the high prices obtainable. The obvious problem which arose out of this condition was whether, upon the ending of the war, this entire fabric of enormously inflated prices would collapse suddenly and at once like a punctured balloon, or whether there was a fairly good chance of a slower and more gradual decline, the one alternative of course spelling terrific losses, and the other an opportunity to make the transition from the one level to the other with reasonable safety. There was a deep-seated fear that the countries of the central powers, having suffered practically not at all from the actual devastation of the war, might by some magic be able to resume manufacturing and shipping their usual products immediately upon the cessation of hostilities. Needless to say, very few men if any, were able to foresee the conditions under which hostilities actually did cease, and no one could have imagined what really took place and is still taking place within those countries. When the crisis came, the signing of the armistice was the signal for a swift and general change of position and attitude by manufacturer, merchant and speculator alike. There was no panic, but the feeling was very much like one. To get rid of high cost stock on hand with minimum loss and to refrain from buying more except from sheer necessity, was instinctively felt to be the thing to do. Business inevitably received a distinct set-back, but there was no collapse. Individual articles went down in price for varying specific reasons. Others on the contrary went up—some logically as had been expected of them; some unexpectedly and for reasons which had not been foreseen. The general average of prices however remains abnormally high, and we now know that it could not have been otherwise and that it cannot be for some time to come. There must of course be a steady and increasing pressure downward on those commodities which are still being produced under what are practically war conditions, or the prices of which are being kept up artificially. But we could not expect to have low prices on goods

which come normally from Russia, Germany or Austria, even assuming we wanted goods from there and could get them. We cannot expect the products of war-shaken France to come out at old prices even when her shattered industries again strike something like their natural stride. The same is true of the other allied countries. It is true of the neutrals or most of them, and it is true finally of ourselves. The whole world is staggering under the burden of a war debt of almost incomprehensible magnitude. Anarchy, strikes, turmoil and terror are rampant practically throughout Europe. Our own country has remained physically almost untouched by the war, while commercially and financially we have prospered enormously. But our very prosperity and the tremendous excess of activity which it engendered have brought us high prices; and the reasons are plain and on the surface. We all know the extraordinary condition of the labor market. We know the plight of the railroads and other public utilities and what it is costing us. We know the governmental strong arm program of maintaining farm products at exorbitantly high price levels and what the consequences must be. We know that gold is substantially at a discount. We know finally that all these things acting and reacting upon each other have to an alarming extent impaired the purchasing power of our money, and this literal cheapening of the dollar naturally and inevitably finds direct expression in high prices. We are taking it for granted that as a matter of course these abnormal conditions will somehow gradually correct themselves, and that ways and means will be found to help along the remedial processes; but it must also be obvious that this will take time and that the period of re-adjustment and re-construction will be much longer than we thought. We can and must all help to shorten this period, and the point I wish to make here is that the way *not* to do our share of this work is to allow ourselves, from fear of the bugaboo of crumbling prices, to sit tight in a mistaken attitude of self-preservation and practically stop doing business simply because the business may not promise to be as profitable as it has been during the past two or three years.

By way of illustration of the fact that instead of a sudden collapse of values we have had only a partial and orderly decline, I have plotted for comparison the prices of 25 representative perfumery raw materials, synthetics and essential oils, which you are

all constantly using. The average price of these 25 materials in 1914 before the war was thought of was $17.00. By the middle of last year, before the end of the war was clearly foreshadowed, this average price had risen to $33.50, almost one hundred per cent. At the present time the same 25 materials represent an average of $28.50, which is to say that they have lost only about a third of the total advance and still average more than 50 per cent. higher than their pre-war level. Such an average price of course means nothing to the individual who paid $65.00 for methyl anthranilate last year and now sees the price at about $15.00; but it has some value as a composite of the actual performances of the market.

As to the present position and apparent prospects of individual materials or groups of materials, I shall limit myself to a few brief references. The synthetic situation is now clearing up fairly rapidly, and comparatively few products remain unobtainable. The release from their war status of such chemicals as acetone, toluol and the like, has already been reflected in the materially increased supply and lower prices of such products as the ionones, benzyl compounds, and others. Ability to bring forward heavy accumulations of clove spice from Africa has lowered clove oil fully 50 per cent. and will have a material effect upon the group of aromatics derived from it which include as you know the important carnation bases. The foreign manufacturers of these fine chemicals are of course still struggling with enormous difficulties and it remains to be seen just how complete a recovery they can make without going to Germany for many essentials, as they did before the war; but they can at least now see daylight ahead and I think we may reasonably expect the synthetic line in most if not all of its ramifications to be in fairly good shape and on a practicable price basis before the end of the year.

In the field of natural floral products and essential oils the process of restoration may similarly be expected to make reasonably rapid progress. The industries of southern France and the other Mediterranean producing countries which struggled along so wonderfully during the war period are still handicapped enormously by the want of labor, fuel, transportation, raw materials, containers and what not; but conditions will undoubtedly improve as steadily and satisfactorily as we have any right to expect. Such oils as the geraniums, neroly, lavender, ylang ylang and vetivert continued to

advance after the close of the war chiefly because of real shortage and to some extent because of obstructed distribution owing to transportation troubles. With the coming of another crop they should be easier, but there is at this time little encouragement to expect an early return to anything like pre-war levels. Sandalwood, amyris and patchouly oils also remain abnormally high in keeping with the raw material situation, both as to cost at primary sources and transportation for the great bulk involved. The otto of rose question remains almost as much of a mystery as it was a year ago, but it cannot continue so much longer. Heavy shipments of other products have been permitted to come out of Turkey and Bulgaria and with them have come some driblets of rose oil which the shippers have doubtless hoped to sell at famine prices. Unless all conjectures have been wrong however, there must soon come a heavy flow of this important material and with it something like practicable values.

Animal musk became so scarce and dear in China that its importation was brought practically to a standstill; but here too we have signs of material improvement and there are shipments on the way from the East at prices which, while far from low, are at least not impossible. Civette was extremely scarce for a time, not because it did not exist, but because the Mediterranean embargo made it impossible to bring shipments through. The supply is now somewhat better and the price did not at any time advance unreasonably. Of ambergris no catch or find of any importance was reported during the past year. The last good sized lot, something over 100 pounds of exceptionally fine quality, came to this market two years ago and you will be interested to know that, notwithstanding the war, it all went to France. The replenishment of the supply in this case is of course a matter of fisherman's luck and at least for the present we shall have to get along without it.

I shall not detain you longer with an extension of this catalogue. The placing of one's finger today on a fact which was elsewhere yesterday and will probably be again removed tomorrow, is of little value except in following that particular fact. What we are concerned with is the general aspect of our question rather than the particular, and I think that we may consider this general aspect fairly presented in the group of average market prices cited, which to my mind indicate that we have probably emerged about one half

from the chaos in which we were last November. We shall most likely be much longer extricating the other half and as to some things I dare say we may never get back where we once were. To sum up the matter I think we are justified in saying that the situation of this industry in respect of its raw materials is broadly about the same as that of the country at large. We have come through the storm without shipwreck, and while we are still wallowing in troubled waters and hampered by the fog of uncertainty, all we need to keep off the rocks is watchfulness, self-confidence and a little more of the same kind of luck we have had.

A REVIEW OF THE ADVANCES IN PHARMACY.

By John K. Thum, Ph.M.,

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Dichloramin-T and Petrolatum Dressing for Burns.—Dr. Sollmann, of the Western Reserve University School of Medicine, recounts a detailed study of this substance undertaken in the pharmacologic laboratory of the university. Dichloramin-T has the very real advantage of furnishing a continuous supply of the antiseptic agent, the action being continuous for long periods of time and can be applied with the simplest form of dressings. Of course the importance of a substance that will supply continuous antiseptic action over quite a period of time when it is impossible to kill all the bacteria at once can be readily appreciated. Its convenience of application can also be readily appreciated. However, dichloramin-T has some rather glaring disadvantages. The solutions must be prepared with some care, and must be fairly fresh, or else treated for the presence of available chlorine. Application causes considerable smarting and burning. This, though, disappears promptly and can usually be tolerated. It is very prone to irritate the skin after repeated applications.

In most cases these advantages are of little import and can be overlooked. In connection with the treatment of burns, however, limitations manifest themselves that must be reckoned with. The large open surfaces require protection against mechanical irritation and access of air, and dichloramin-T-chlorcosane solution fails in

this particular. It was found that this solution is absorbed by the dressings, which are then glued by the wound secretions, which cause pain and injury when the dressings are removed or changed. It was also noticed that paraffined lace-mesh gauze does not prevent this.

Such results were particularly conspicuous in the case of the very painful and slow healing "mustard gas" (dichlorethylsulphide) burns that came under the doctor's observation. When such burns get to the ulcerative stage, they become so sensitive that they have to be proteced by thick petrolatum dressings, especially at night. As such dressings give protection to the bacteria as well as to the tissues, they are particularly undesirable. Infection flourishes and healing is delayed. It was hoped to obviate this either by alternating the antiseptic and protective dressings or by applying a petrolatum dressing to the wound after it had been painted with dichloramin-T-chlorcosane solution (generally of 2 per cent. strength).

Notwithstanding the fact that dichloramin-T is gradually destroyed by ordinary petrolatum it was hoped that the destruction would be so slow that some of the antiseptic would last from the one dressing to the next. This was not realized. This conclusion led to a more detailed investigation of the destruction of dichloramin-T by petrolatum and various other solvents. The result was a special petrolatum medium which was found to be sufficiently compatible with dichloramin-T for surgical purposes, so that it may be applied either mixed directly with the dichloramin-T or as a protective dressing over the dichloramin-T.

Dr. Sollmann calls attention to the fact that liquid and semi-liquid mixtures of petrolatum with active drugs are not subject to the same limitations as is the incorporation of these drugs into solid paraffin. Solid paraffin prevents adequate contact of the mass of the antiseptic with the wound. On the other hand, he says, the layers of liquid and semi-liquid mediums in contact with the wounds are continuously changed, so that good contact is secured.

The rapidity of destruction or deterioration of dichloramin-T in various solvents was estimated by the changes in the "available chlorine," occurring at successive periods in solutions or mixtures containing originally two per cent. of dichloramin-T.

This was done by the method mentioned in "New and Non-official Remedies," 1918, p. 158. To duplicate 5 Mil or 5 Gram

samples of the mixtures to be tested, there were added 5 Mils of glacial acetic acid, 10 Mils of ten per cent. potassium iodide, and sufficient carbon tetrachloride or chloroform to thin the material (usually about 5 Mils); then a few drops of starch test solution, and finally, from a burette, sufficient tenth-normal sodium thiosulphate solution to discharge the color.

Each Mil of tenth-normal sodium thiosulphate solution corresponds to 0.0177 Gram of available chlorine.

The solvents worked with were too samples of chlorosane; two of liquid petrolatum; five of petrolatum; carbon tetrachloride, which gives the most stable solutions; kerosene, which is very destructive, in fact more so than olive oil. Liquid petrolatum solutions show some loss at once, but preserve a fair efficiency for a month. Chlorosane solutions keep practically perfect for three days, and after that are fairly active for a month. Ordinary petrolatums are very destructive for dichloramin-T; in fact the efficiency is destroyed at once. The amount of deterioration is the same regardless of the color impurities in the petrolatum.

The conclusions of this laboratory investigation of dichloramin-T show that an ointment of three parts of surgical paraffin and seven of liquid petrolatum has relatively little destructive action on dichloramin-T and can be used as a protective dressing on wounds (burns) treated with dichloramin-T-chlorcosane solutions, and even as a basis for a dichloramin-T ointment.

Ordinary petrolatum, irrespective of its color, is very destructive of dichloramin-T, and cannot be used effectively with it.

Liquid pertoleum can be used in emergencies as a vehicle for dichloramin-T, although it is inferior to chlorcosane.

Solutions of dichloramin-T in carbon tetrachloride are very stable, while those in kerosene or in olive oil spoil very rapidly.—*Jour. A. M. A.*, April 5, 1919.

Cinchona Research in Java.—It may not be generally known that a cinchona experiment station exists in Java. This station was founded in 1911, and though it has issued a few bulletins, it has not published an annual report until this year when the reports for 1916 and 1917 were issued together. The station has for its object the study and investigation of this important drug-plant in all its phases, and to be in a place to give advice on agricultural, botanical, chemical, and entomological matters to those who are interested in the

development of this industry. Analyses of bark are made for which a reasonable charge is made. A botanical research has been undertaken on the morphology of flower and fruit formations in cinchona, which is expected to bring forth results of considerable value in connection with the production of hybrids.

The effect of humidity on the causation of disease in cinchona, is receiving some attention, as is also the question of the loss of seed in seed-beds. This study has been stimulated by the many complaints of the quality of seed supplied by the authorities to those conducting cinchona plantations. These losses were due to attacks by mites. In questions of this sort the services of an entomologist are needed. The effect of the temperature of drying on the alkaloidal content of the bark is a very important one and is receiving attention.

It is of interest to know that cinchona plants are being introduced into the Philippine Islands from India. A missionary institution at Sagada, Island of Luzon, is the pioneer in this attempt. The cultivation of cinchona has never been attempted before in the Philippines.—*Chemist and Druggist*, 91 (1919), p. 45 and 70.

Acetyl-Amido-Ethoxy Benzene.—To the foregoing the coined name pertonal has been attached, which no doubt will make it popular with the laity and tend to encourage self-medication in the same manner that the giving of the euphonious title "aspirin" to acid acetylsalicylic, has proven. The action of this combination has been studied and compared to acetphenetidin. It has about one half the toxicity of the latter and as an antipyretic it produces similar effects in doses about double those of acetphenetidin. While acetphenetidin has a direct depressant action on the heart, this organ is actually stimulated by pertonal. Against an antipyretic ratio of two parts of pertonal to one part of acetphenetidin, the corresponding ratio for narcotic action is approximately 15 to 1. It can be said that in general the action of pertonal is less abrupt and more prolonged than that of acetphenetidin. It was shown that both drugs are excreted mainly in the urine in the form of p. amidophenol and phenetidin. It seems that a larger amount of phenetidin and a correspondingly smaller amount of p. amidophenol is set free in the tissues by pertonal than by acetphenetidin. No evidence of the formation of methemoglobin has been found after the intake of pertonal, although this change is often noticed after the intake of

acetphenetidin. Although it was particularly sought for, no evidence of oxalic acid formation after the intake of pertonal was found. The investigator, Dr. Cow, advises a range of therapeutic dose of from 0.6 to 1.2; he also suggests that the dose need not be repeated so frequently as the dose of acetphenetidin.—*Jour. Pharmacology and Experimental Therapeutics,* Baltimore, 12 (1919) 343, through *Jour. A. M. A.,* April 5, 1919.

Russian Rhubarb.—From an investigation of rhubarb cultivated in Russia the investigator is of the opinion that the oxymethylanthraquinone is the same as that found in the Chinese drug. Furthermore, he found that the Russian drug contains more emodin, more oxymethylanthraquinones and more anthraglucosides. The investigator, whose name is Semmel, also found that large quantities of the last two substances appear to be formed during the drying of the drug.—*Archiv. d. Pharm.,* through the *Pharmaceutical Journal,* March 8, 1919.

The Cultivation of Rhubarb and Liquorice in Switzerland.—Attention is called to localities in Switzerland where the cultivation of these well-known drugs would be attended with success. In mentioning this, Tschirch calls attention to *Rheum tanguticum,* which probably yields the best rhubarb, is a mountain plant, and says that it is fair to assume that it would probably flourish in open woods at an elevation of from 2,000 to 3,000 meters. From a well-grown plant it would be possible to take every year from twenty to thirty or more lateral rhizomes for cultivation, in this manner a few plants grown in an experimental garden would provide a large number of new plants each year. The delta of the Maggia, on the Lago Maggiore, near Locarno, would be an ideal spot for the cultivation of *Glycyrrhiza glabra,* which flourishes best in wide valleys on the banks of rivers that often overflow. As at the present time this region is uncultivated no obstacles would stand in the way of its use for this purpose. It has been estimated that if the cultivation were begun now, the canton of Ticino could in ten years' time supply the whole world with liquorice, for the cultivation of this plant is quite simple and the multiplication of the plants is very rapid.—*Schweiz. Apoth. Ztg.,* vol. 56, p. 257, through the *Pharmaceutical Journal,* March 8, 1919.

Food Reserves in Woody Plants.—Investigations by Sinnott on the distribution of starch and fat in a large number of woody

plants at various seasons leads him to believe that during winter starch is commonest in regions remote from centers of production, and in cells with thick, well-lignified, small-pitted walls, and that fat is most abundant in and near the phloëm, close to the vessels, and in cells with thin or unlignified walls or large pits. He says that where the movement of liquids is slow, starch predominates, and where such movement is easy, starch disappears at the beginning of the winter, and fat is produced. He believes that this manner of food reserve may be due to differences in the water content of the storage cells giving a modification of enzyme action or to differences in the case with which enzymes have effective access to the storage cells.—*Botan. Gazette,* vol. 66, p. 162, through the *Pharmaceutical Journal,* March 8, 1919.

Comfrey Extract for Boils.—Dr. Brunier states that a soft extract of comfrey root in his hands has been found to be an excellent remedy for the treatment of those distressing things, boils. He gives it in doses of 0.6 Gram three times a day. At the end of from twenty-four to forty-eight hours the inflammation lessens, the pain disappears, and on the third or fourth day the pus is discharged. If there happen to be several boils the more advanced ones go through the process just described and the others are absorbed; no new ones are developed.—*Presse Médicale,* May, 1918, through the *Pharmaceutical Journal,* March 8, 1919.

Castor Oil as a Dressing for Wounds.—Dr. Revillet in the *Lyon Médicale, Répertoire de Pharmacie,* states that in his experience he has found this oil to be an excellent basis as a dressing for wounds. He claims that it is non-irritant, non-drying, does not adhere to the tissues, penetrates well, and mixes with alcohol and essential oils. He found the following mixture ideal for this purpose:

Oil of thyme	45.0 Mils.
Oil of lavender	45.0 Mils.
Oil of eucalyptus	5.0 Mils.
Castor oil, to make	1,000.0 Mils.

This mixture may be applied direct to the wound or used to impregnate the gauze compresses or muslin bandages.—*The Pharmacuetical Journal,* March 8, 1919.

The Pharmacologic Action of Allocaine S.—This drug and Allocaine A. are synthetics made by Nagai by introducing into mydriatine

mono-ethyl and di-ethyl and benzoyl groups. The pharmacologic action of Allocaine S. has been studied by Kubota, of Mukden, Japan. He observed that it causes paralysis in frogs and convulsions in rabbits, acting on the central nervous system. The lethal dose, he says, is smaller than that of either cocaine and procaine, when injected subcutaneously. It causes a local paralysis of sensory nerve endings and nerve fibers, and its anesthetic power is stronger than procaine and weaker than cocaine. Kubota noticed that Allocaine S. has a twofold action on blood vessels: a primary dilation and a secondary constriction, and in warm-blooded animals the former action, and in cold-blooded the latter appears more pronounced. A slight local irritation is caused by subcutaneous injections. Large doses of the drug paralyzes the heart, acting on the motor apparatus and conductive system, and causes in frogs a paralysis of respiration and in rabbits a stimulation of it; this action seems to be the central character. It also has an influence on the blood pressure. The substance causes a primary fall of pressure which is followed by a rise above the normal. It also inhibits the growth of both streptococci and staphylococci which is a great advantage. The investigator states that Allocaine S. is a good local anesthetic in many respects, but on the other hand it has also some unfavorable qualities. However, its use may prove to be rather limited on account of its acid solutions and its tendency to precipitation by the tissue fluids. Notwithstanding this Allocaine S. has been used in several hundred cases of operations with success.—*Jour. of Pharmacology and Experimental Therapeutics,* Baltimohe 12 (1919), 343, through *Jour. A. M. A.,* April 5, 1919.

Gelatin Tannate.—According to E. Choay, *J. Pharm. Chim.,* 16 (1917), 137, the preparation of tannate of gelatin offers no obstacles in its manufacture and really is a reliable substitute for certain organic tannin compounds, such as tannalbin and tannigen, which were at one time rather popular with physicians. Ten Grams of a good gelatin are dissolved in the greater part of one liter of distilled water; twelve Grams of tannic acid are dissolved in the remainder. The tannin solution is now poured in a thin stream into the cold gelatin solution with constant stirring. The precipitate is allowed to settle and the supernatant liquor treated with a little more of either solution to determine if either is in excess. If so, sufficient of the required solution is added to bring about complete precipitation. A cloudy mixture indicates excess of gelatin. The super-

natant liquor is then decanted, the precipitate drained and rapidly dried at a moderate temperature. Gelatin tannate, prepared in this manner, is a white odorless nearly tasteless powder; almost insoluble in water, dissolved by alkalies, and insoluble in acids. It has proven to be a good intestinal astringent, being less irritant to the stomach than tannin and most other tannates. For an adult the dose is 0.5 Gm. given from four to eight times each day. Children can be given from two to three decigrams four or five times each day.—*The Pharm. Jour.*, 102 (1919), 172.

Peppermint Cultivation in Holland.—It is claimed that the experimental cultivation of this most popular household remedy is being attended with promising results. Two lots were found to contain 0.70 and 0.95 per cent. of oil respectively. Taste and odor were deemed excellent. A chemical investigation revealed the following: Refractive index (20° C.), 1.4621 and 1.4615; optical rotation, —29°.2 and —29°; specific gravity, 0.907 and 0.905; ester value, 23.7 and 21; combined menthol, 61 and 63.4 per cent. It is hoped to repeat these experiments next year on a larger scale.—*Pharm. Weekbl.*, 56 (1919), 41, through *The Pharm. Jour.*, 102 (1919), 172.

PHARMACOPŒIAL NOMENCLATURE.[1]

Prior to the outbreak of the war the necessity of establishing international standards for potent drugs was realized, and in the course of time recognized by all pharmacopœias. But while provisions were made for standardizing the strength of certain preparations nothing was done towards establishing uniformity in nomenclature, either in the Latin titles adopted by different pharmacopœias, or indeed in the names of similar preparations. Thus, at present we have the following official varieties in Latin nomenclature for the same substance: Hydrargyri subchloridum, hydrargyri chloridum mite, hydrargyrum monochloratum, chloretum hydrargyrosum, hydrargyrum chloratum. This lack of uniformity in nomenclature almost led to a Belgian pharmacist being shot, under the following circumstances. A German doctor doing duty at Fort Malonne sent down to the military hospital in Namur a collective

[1] Reprinted from *The Chemist and Druggist*, May, 1919.

prescription for medicines urgently required. In those days the Belgian pharmacists attended to this work, and they found that in addition to carbolic acid, iodoform, formaldehyde, gauze and cotton wool, the following requirement figured on the prescription: "Hydrargyrum chloratum 50 Ag, 10 Stück." The pharmacist who made up the prescription took this to indicate corrosive sublimate, in the first place, as all the articles enumerated were for the treatment of wounds, and, secondly, because calomel, in Belgium, is not prescribed in tablet form. To make quite sure, he consulted some colleagues, and then put up the corrosive sublimate tablets in an octagnoal brown bottle, with the words: "Usage Externe," "Uitwendig Gebruik," printed in the glass, and on the label he wrote: "Hydrargyrum chloratum—sublimé corrosif," adding a label with a skull and cross bones, and another with the words: "Poison, Vergift." In spite of all these precautions the hospital attendant, seeing the name "Hydrargyrum chloratum," which to him meant calomel, administered a tablet to a patient, with the result that he was poisoned. M. V. Dulière, the chief inspector of Belgian pharmacies, who relates this incident in the *Journal de Pharmacie de Bélgique* (No. 13, 1919), says that the pharmacist had to appear before a court-marial on the charge of attempting to cause the death of German citizens. The German authorities, happily, consulted M. Dulière, whose explanations regarding the differences in nomenclature, the special circumstances of the case, and also the precautions taken by the pharmacist in putting up the dangerous drug, convinced the examining officer, and the accusation against the Belgian pharmacist was dropped. M. Dulière mentions this incident to draw attention to the dangers arising from the present variations in nomenclature.

A SKETCH OF DR. LYMAN SPALDING.[1]

By Henry M. Hurd, M.D.

Dr. Lyman Spalding was born at Cornish, N. H., in 1775. His early education was obtained at the Charlestown Academy, and later he was a student in the office of Dr. Nathan Smith, the eminent founder of medical schools, and the first of the name of the Smiths who later became distinguished in New England and Maryland. He afterwards visited the Harvard Medical School in 1794 and attended two courses of lectures there, but did not receive his degree of M.D. until 1797. He returned to Cornish, N. H., the residence of Dr. Smith, and took charge of his practice during the latter's absence in Europe. He subsequently taught chemistry and materia medica with Dr. Smith at the newly established medical school at Dartmouth College, N. H. He also became demonstrator of anatomy.

He soon removed to Walpole, N. H., where he practised for a few months also. His residence there is mainly interesting because of the fact that he purchased a set of Perkins Tractors, then much used and highly praised for the treatment of diseases. These tractors were sold for $20, with the exclusive right to use them in practice both in this country and in Europe. It was one of the common medical frauds which are perpetrated on all nations about once in so often.

Dr. Spalding removed to Portsmouth, N. H., in 1797, and there had a successful career. He became a contract army surgeon, and had so much to do that he relinquished his connection with Dartmouth College. He was a diligent student, and active in all matters

[1] Read before The Johns Hopkins Hospital Historical Club, February 10, 1919. Reprinted from *Johns Hopkins Hospital Bulletin*, May, 1919.

Editorial Comment.—In the past, as from time to time we read the "Historical Introduction" to the Pharmacopœia of the United States, the desire to know more about the history of Dr. Lyman Spalding, who in the initial paragraphs, is given credit for originating the project for the formation of a National Pharmacopœia, became stronger with each reading. This desire has been gratified by the publication recently of the "Life of Dr. Spalding" prepared by his grandson, Dr. J. Alfred Spalden. The facts presented in this sketch are taken from this memoir and are presented in such an interesting way that we are of the opinion that the reprinting thereof will be appreciated by many pharmacists.

connected with medical coöperation. He established a medical society, an anatomical museum, and originated and distributed so-called "bills of mortality," giving the causes of death of persons who died in Portsmouth from the years 1800–1813. He also essayed the growing of opium and lettuce in his garden for medicinal purposes.

In the "Life of Dr. Lyman Spalding" several interesting chapters are given on the introduction of vaccination into this country. Dr. Spalding, who was living at Portsmouth, wrote to Dr. Waterhouse, of Cambridge, who had received the Kine Pox from Jenner in England and seems to have had the monopoly of the introduction of vaccination into this country. Waterhouse was undoubtedly a man of ability and energy, but probably lacked money and felt the need of exploiting the new discovery for his own benefit. He, accordingly, writes to Dr. Spalding, in reply to his letter, asking for one quarter of the amount received from Dr. Spalding's vaccinations during the succeeding fourteen months, insists that "the small sum of five dollars" be charged for each vaccination, and guarantees that the exclusive privilege will be granted upon these terms. He also makes careful mention of the fact that he has Jenner's matter direct from England. A long correspondence took place between Spalding and Waterhouse. Both parties seem to have been anxious to make money from the introduction of vaccination, but Waterhouse appears in the most unfavorable light. After acceding to Spalding's proposition that he have exclusive control of vaccination in Portsmouth, he shows great anxiety that he, Spalding, should associate with him a Dr. Cutter and, later, Dr. Cutters' son, on the ground that the activity of these men would increase the number of vaccinations and thereby increase the profits to be derived from the exclusive privilege of managing them. In one letter Spalding asks for the privilege of twelve months, and later suggests that he will pay 10 per cent. of all the sums which he receives for vaccination until such time as vaccination becomes public property. All that he received from Dr. Waterhouse seems to have been the exclusive privilege of vaccinating persons within the limits of Portsmouth, and a small piece of thread which had been dipped in the vaccine lymph. Later it seems that Spalding was to pay $150 for this piece of thread, and a certain proportion of the money which he received for the vaccina-

tions. Owing to the fact that it soon became apparent that one patient could be vaccinated directly from the arm of another, the exclusive privilege of using the vaccine lymph was soon broken up.

This destruction of the monopoly was undoubtedly much hastened by the unsatisfactory character of the vaccination when the thread impregnated with lymph was used, and the great inferiority of this method to the method of vaccinating from arm to arm. The physicians had many failures. It is also interesting to note that Dr. Spalding, on two separate occasions, made observations upon patients who had been vaccinated and afterwards placed in smallpox hospitals, and freely exposed to the disease for a number of days without acquiring smallpox. Spalding also received a letter from Edward Jenner, the discoverer of vaccination, and subsequently a specimen of vaccine lymph directly from him.

Spalding issued at Portsmouth during the following twelve years bills of mortality—so-called—beginning in the year 1801. Copies of these bills were sent to John Adams, then President of the United States, and subsequently to Thomas Jefferson, Benjamin Waterhouse and Benjamin Rush. Waterhouse, with his usual critical spirit, made reply in the following letter:

CAMBRIDGE, March 18, 1802.

Dear Sir: Your letter of the 11th inst. came duly to hand and I have endeavored to comply with your request, so far as to send you some matter on the point of a quill. As to the thread, it is full a month old, but was from a very perfect case and has been kept in a proper degree of temperature ever since. I am now so in the habit of taking the vaccine fluid from arm to arm, that I am not so constant in preserving it on the thread or otherwise. Considerable attention and patience are required in the first use of an old thread. It ought always to be moistened with the vapor of hot water.

You mention my not having answered your last letter. I have received no letter from you since you wrote to me in answer to one of mine. I received a printed bill of mortality, 5 or 6 weeks ago, but no written line whatever with it and I have no letter from you for 4, 5 or perhaps 6 months past.

I have just received "Observations on the Cow Pox" from Dr. Lettsom. I shall probably publish a second pamphlet in a month or so, being practical observations, etc. In the meantime I sent a few to the Medical "Repository" for their next number.

I am glad to find that you attend to the occurrences of Mortality. Excuse me for making a few remarks on the one you were so obliging to send to me. 1. Did APHTHÆ kill the infant, or was it a symptom of another disorder, or in other words: was it sympathetic or IDIOPATHIC?

2dly. We very rarely see consumption in patients above 50 years of age,

more rarely above sixty and very rarely indeed at 70. There is a chronic cough and emaciation, and great expectoration in old people, but it is not the true Phthisis Pulmonalis.

3dly. Is not DEBAUCHERY rather a VAGUE term for a general Head? Does it mean Drunkenness exclusively?

4thly. I never yet saw a very young child with Epilepsy. There is a wide space indeed, between the convulsions of infants, and that truly wonderful disease, EPILEPSY.

5thly. Mortification: Was it in the bowels or the feet? As they are widely different in their cause. See Pott in the LATTER.

6thly. Death from SCROFULA is very uncommon. It predisposes to fatal diseases.

7thly. PAREGORIC: Does it mean that the Child was poisoned by that composition? If so, had it not better been by Opium as Paregoric means a Mitigator?

You will excuse these hasty observations that occurred on the perusal. They have not originated from a disposition to criticise but from a desire to have them free from every exception.

Yours Steadily,
B. WATERHOUSE.

In 1802 Spalding invented a galvanic battery, which gave rise to considerable correspondence, and which unquestionably was used extensively among his brother physicians. He had letters asking how to make similar batteries and also their exact therapeutic uses. He further devised a process for manufacturing oxygen for inhalation, and later invented a soda water fountain, which seems to have been quite extensively used. As he neglected to protect his invention by patents, as it appears in his biography some years later, patents were secured by other persons, and he was forbidden to use it without paying a royalty for his own invention. He was an active writer, especially upon anatomical and surgical subjects. His practice also extended in surgical lines, and he performed operations for hernia, extraction of cataract and removal of necrosed bone. He continued his interest in vaccination, and received a second letter from Jenner, who acknowledged the reception of some interesting details concerning vaccination and the bills of mortality, for which he thanked him. In Jenner's letter an interesting detail is given concerning the good effect of vaccination in controlling cases of smallpox in Vienna. Prior to vaccination the annual average of such cases was 800. Four years subsequent to the introduction of vaccination, but two cases of smallpox occurred in the city.

Dr. Spalding seems to have had a remarkable facility for friendship, and made warm friends in many parts of the country. One of his friends and subsequent correspondents was Bishop Philander Chase, a boyhood acquaintance, who subsequently became Bishop of Ohio, and later of Illinois and founder of Kenyon and Jubilee Colleges. Dr. Luther Jewett was another friend, a Vermont worthy who had excelled in the practice of medicine, the practice of law, the gospel ministry and the editorship of an influential newspaper; four distinct branches of effort, in each of which he achieved marked success. He was also a warm friend of Dr. John C. Warren, of Boston; Dr. Alexander Ramsay, the famous anatomist from Scotland, and Dr. George Shattuck; of Boston. He wrote letters to John Bell, the distinguished Edinburgh surgeon, and also to Charles Bell, and as his thoughts turned very much to medicine abroad, he made every effort to get an opportunity to visit England and the continent to better fit himself to teach medicine. He sent a petition to the Secretary of State of the United States Government, asking that he be made a special messenger to carry dispatches to France, and received a courteous message to the effect that the services of no such messengers were needed at that time. He visited Philadelphia in order to fit himself better for his profession, and there saw the eminent Dr. Physick, and Drs. Wistar, Rush, Shippen and Barton. He writes that the school in Philadelphia had 350 medical students and later, when in New York, he contrasts the popularity of Philadelphia and the large number of students with the fact that New York had only about 100 medical students.

There is an interesting chapter in Spalding's life which has been detailed at considerable length by his biographer and deserves mention. In 1809 he became connected with the Fairfield Academy, located at Fairfield, about ten miles from Little Falls, N. Y. Fairfield Academy was one of a chain of academies which had been established to promote education in the state under the charge of the board of regents. The great demand for medical men to provide for the needs of an ever increasing emigration to the west at this time gave rise to many medical schools. In addition to the New England schools founded by Dr. Nathan Smith, there were schools at Pittsfield, Mass., and Castleton, Vt., in addition to Harvard and the schools in Philadelphia and New York. He was appointed

lecturer at Fairfield Academy in 1809, and lectured there for several years. The journey to Fairfield from Boston was a matter of three days and nights. He was made lecturer on chemistry and surgery during his first appointment, while Dr. George C. Shattuck, of Harvard, was made lecturer on medicine. The courses seem to have been not simultaneous, but tandem, as it were, Dr. Spalding lecturing on chemistry and surgery for six weeks, and being followed by Dr. Shattuck, who lectured for the same period on medicine, this making a term of three months. The success of the school was so great that it became necessary to erect a new building, and permission was asked of the legislature to establish a lottery to raise $5,000. Lotteries, it may be remarked, were at this time a popular method of raising money for educational and religious purposes. The Washington Monument in Baltimore was started by a lottery, as also the University of Maryland, the First Presbyterian Church and St. Paul's Church. Many details are given in the biography of Spalding in reference to the lottery plan, and new light is thrown upon it by the suggestion in one of the letters that, if the legislature granted the authority, the privilege of the lottery might be disposed of to some other parties at a discount. The success of the school at Fairfield became so great as to excite the cupidity of persons who were interested in the development of Hamilton Academy, at Clinton, N. Y., into Hamilton College, and an effort to establish a similar medical school at Hamilton. The agitation finally brought an appropriation of $100,000 to Hamilton Academy, and it became Hamilton College, while Fairfield was obliged to be satisfied with receiving $10,000 for the construction of a building and a charter giving the privilege to grant degrees, and thus to become an established medical school.

The following letter, sent by Dr. Spalding to Dr. George Shattuck, of Boston, gives a very interesting idea of his conception of the influence of medical teaching, and its benefit to the medical teacher:

Dear Sir: I can only say that I regret exceedingly the opinion of yourself and friends, that your avocations will not suffer you to visit Fairfield once more. I acknowledge that, at present, the compensation is not adequate to the output and the loss of business, but, Sir, I do really believe that this school may be made second to none but Philadelphia. If not, I will join with you in resignation. What effect has the Professorship already had on

you? It has compelled you to pay close attention to your profession, to pass the whole of Cullen's "Nosology" in review, before you annually, and thereby qualifying you for the practice of your profession more than any other way in which you could have spent your time. It is the high road to fame, and usefulness. I know that my sacrifices have been great. I know that yours must be. But, show me the man who has risen to be a Prince of Physicians, while slumbering on the couch of idleness.

Soon after I came to Portsmouth, I resigned my office of Professor of Chemistry in Dartmouth, no doubt from the same motives that now influence you, with this addition, that my lectures there had to continue three months. I soon found myself slumbering on my oars and relaxing my pursuits. In fact, so far from improving, I hardly kept pace with the others. A kind of indifference for science pervaded me: Indignant I aroused, I went to Hanover to see Ramsay, I went to Philadelphia, and I planned a voyage to Europe. This change, Sir, I consider the most happy circumstance in my whole Professional career.

Admit that you resign your office. Man is an indolent animal. What inducement have you then, to labor incessantly? None! Your reputation is as high as that of your contemporaries. Then, wrapped in the lap of affluence and ease, you will slumber and sleep till old age creeps upon you, when you will find yourself outstripped in the race of usefulness and fame, your opinions so antiquated as to be regarded not, and yourself a mere old Granny!

Look at the Princes, or rather, Fathers of Physic. Who have they been or who are they now? So far as my memory serves me; Teachers of Physic. Boerhaave, Cullen, Desault. Look at Rush, Warren and Smith. What has put them at the head of the profession? Nothing but their being compelled to labor, and annually to review their profession, and incorporate with their old stock all the new improvements. Show me a man in private practice who does this, annually. He is not to be found. But, your friends say that you can do this, yet stay at home. I acknowledge this, but tell me honorably, Will you do it? No, Sir, you have no inducement. For a man to be pre-eminently great, there must be a great occasion. What made Washington Great? Opportunity. You are now on the same high road to reputation that every Prince of Physicians has travelled. If you turn aside, you are lost forever. These in conjunction with those in my last letter are the reasons which ought to influence you. You can have no doubt of my wishes on the subject. The time for the commencement of the lectures is so near at hand, that no successor can be appointed in season for the next course. I therefore beseech you, on my account, if neither honor nor fame will move you, to deliver This One Course and I will consent to any arrangement that you may then choose to make. If nothing farther, as a mere matter of policy I wish you to withhold your resignation till the meeting of the Trustees of the New Medical College and let us see what they will do for us.

Dr. Mann I knew had been appointed a Hospital Surgeon but I did not know that he had been made Surgeon General. He must be with the Army

by this time and cannot be prepared for the ensuing course. I have no objection to this man, but must for want of room decline saying anything about your successor until I hear from you again. Your friend,

LYMAN SPALDING.

Shattuck, after serving two terms as professor of medicine, relinquished the position, but Spalding, in 1813, was made president of the Fairfield College, and filled most of the chairs in 1814–1815 and 1816. The number of students seems to have varied between fifty and seventy. Spalding seems to have done very faithful, conscientious work, for which he received somewhat irregular pay, and often more pay in promises than in actual money. The school remained in active operation until 1839, when it went to pieces in consequence of squabbles among the faculties as to the division of fees from medical students. The fees seem to have been very small.

In 1814, Spalding went to New York to reside, and had an office on Broadway, for which he was paying about $200 per year. His fees from his patients during the first year amounted to a little more than $1,000. At this time, Spalding seems to have attempted to write a book entitled the "Institutes of Medicine" which, as far as I can learn, was never published in book form, but was circulated in pamphlets, each chapter furnishing a pamphlet. It was praised by Shattuck and Waterhouse, and the reception of a sample pamphlet was certainly acknowledged even by Dr. Caldwell, but the book seems to have made little impression.

The following letter is from Governor Plumer, of New Hampshire, a friend of Spalding's:

EPPING, N. H., Oct. 24, 1818.

Dear Sir: This week I received your letter with your "Reflections on Fever," and Report of the Trustees of the Free Schools, for which you will please accept my grateful acknowledgments. I have read your pamphlet with attention and pleasure, but it is on a subject with which I am not sufficiently acquainted to decide with precision. You know the low state of the Faculty in New Hampshire. We have scarcely any who write on the subject of medicine, and of the great body of our country physicians but few who have any books, to read those few that they have, or to investigate the complex and intricate subjects of their profession. These facts have long induced me to believe that, in many cases, the patient has more to apprehend from the ignorance of the physician than from the disease and that it is safer to trust to nature for a cure than to rely on the prescriptions of those whose knowledge is limited to a few hard technical terms. With us the Gentlemen

of the Faculty have made less progress than those of law and divinity: the latter, indeed, have much to do before they can attain real eminence.

In your profession I have long considered it a desideratum to have an able but simple work, accurately describing the nature and functions of the several parts of man in a state of health, the effect or changes diseases produce on each of those parts and of the remedies for those diseases.

I would purchase and read such a work with pleasure, and that pleasure would be enhanced if it was simple, plain and free, so far as the nature of the subject would admit, from abstruse technical terms, and of attachment to existing theories. Mystery is the enemy of improvement, and it is better suited to prolong the reign of ignorance and of error than to promote that of truth and science. And, the knowledge of things is vastly more important than that of words.

I really wish we had an accurate Journal kept in different sections of our Country of the actual state of the weather, the crops, the general diet and regimen of our citizens, the diseases most prevalent in each, their type, character and mode of treatment, etc., so as to exhibit the means by which health was preserved and lost and how far they depended on climate and modes of living. Such a Society, I think, might be formed of Gentlemen living in various parts of our Country, with little expense and from whose reports much information could be obtained which would be useful to all, and particularly to Medical Characters. I would freely contribute to such an establishment.

But, I am wandering from the object of this letter, which was to thank you for your Pamphlets and to say, that if you or the Historical Society of N. Y., should need any of the few pamphlets we publish here, it will afford me pleasure to procure and transmit them. I remain with much esteem and respect,

Yours, etc.,

WILLIAM PLUMER.

About 1817 Spalding began to agitate the preparation of a national pharmacopœia, notwithstanding the fact that several local pharmacopœias already existed, the most extensive and authoritative one being that of Massachusetts. His motive in urging a national pharmacopœia was due to his desire to secure uniformity, and also to discard local remedies which seem to have been used in different parts of the United States without any sufficient scientific authority. As an example of such local favorites may be mentioned scutellaria or skullcap as a remedy for hydrophobia. It was shown by Spalding that the authority for the use of this remedy was wellnigh universal. Numerous cures through its employment were reported, and in the literature its claims were overwhelming. We now know that it is worthless, and its elimination from the pharmacopœia was

promptly made. The plan proposed by Spalding for the preparation of the pharmacopœia was an excellent one, and has practically been followed for the last one hundred years.

The pharmacopœia was originated in a paper by Dr. Spalding, read before the medical society in the city of New York, in which he pointed out the difficulties attendant upon the present lack of uniformity in the preparation of drugs in the different states. As a result of the discussion which followed the reading of his paper, a committee was appointed, of which Dr. Spalding was chairman, to suggest measures for the preparation of a national pharmacopœia. The country was divided into four districts, known as the northern, middle, southern and western. Through the medical societies of these regions, delegates were chosen to meet at some central point in the district to discuss matters pertaining to the drugs to go into the pharmacopœia, and to elect two delegates, each to go to Washington later to prepare the book for publication. The only two district conventions were those of New England, at Boston, and of the Middle States at Philadelphia, which met on June 1, 1819. The meeting in Philadelphia, although attended only by delegates from the middle district, had done valuable work in the discussion of remedies and methods. The delegates chosen at the two district meetings met in a general convention in Washington on January 1, 1820, Dr. Spalding being one of the delegates. The two rough drafts from the district meetings were examined and discussed, and the preparation of the pharmacopœia was outlined and plans made for its completion and adoption. A committee of publication was chosen, with Dr. Spalding as chairman, which met in New York in June, 1820. The Pharmacopœia was printed in English and Latin, and was immediately adopted as authoritative throughout the country.

About the same time Dr. Spalding also had, in addition to the pharmacopœia, a plan for the establishment of what he termed a medical police to have charge of all sanitary matters. The latter scheme, however, seems to have faded from public sight.

Dr. Spalding did not live long after the publication of the pharmacopœia. In 1821, while walking in the city of New York, he was struck down by some building material which fell upon his head, and rendered him unconscious. Although he recovered apparently, he never enjoyed good health, and gradually went into a

state of physical and mental decline. He gave up practice, sent his family to New England, and later rejoined them there. He died on October 21, 1821, a few days after he reached them.

It is evident that he was a man of unusual ability, being industrious, efficient, and with large powers of initiative. Imperfectly educated as he was, he had made himself an excellent physician, a remarkable surgeon and anatomist, an interesting and inspiring medical teacher, and a member of the profession full of enthusiasm for its advancement and perfection. He was denied the great desire of his life, the privilege of studying abroad, and doubtless had he been able to do so, and had returned to America with the new ideas, his subsequent labors might have resulted in great additions to the medical knowledge and resources of the country. The story of his life is a most inspiring one.

Note.—Since the above sketch was written and presented to the Historical Club, Dr. Kelly has placed in my hands a copy of the first edition of the Pharmacopœia of the United States of America. It bears the following title page:

The
PHARMACOPOEIA
of the
UNITED STATES OF AMERICA.
1820.
By the
Authority of the Medical Societies and Colleges.
BOSTON
Printed by Wells and Lilly.
For Charles Ewer, No. 51, Cornhill.

.....

Dec. 1820.

It is bound in leather and is in excellent state of preservation. The name on the fly leaf cannot be deciphered definitely. It is in pencil and is dim in places. The inscription seems to be James Burbeck, 1827. It has undoubtedly belonged to a druggist or apothecary as it contains many recipes neatly interleaved in various portions of the book. There are also prescriptions for various diseases. The book contains an interesting historical introduction explaining the object of the preparation of the National Pharmacopeia.

There is also a preface which gives full details as to the movements which led up to the preparation of the work. In the list of delegates originally selected to attend district conventions to prepare lists of medicines and to select local committees are to be found names eminent in the profession one hundred years ago, many of whom figured in medical literature. A good many of them also were members of the final committee which prepared the National Pharmacopeia.

From New York there were: David Hosack, Samuel L. Mitchell, T. Romeyn Beck, Lyman Spalding, John W. Francis and Valentine Mott. From Massachusetts: John C. Warren, Jacob Bigelow, James Thacher and George C. Shattuck. From New Haven: Eli Ives and Nathan Smith. From Philadelphia: T. T. Hewson and Joseph Parrish. From Maryland: Nathaniel Potter, Elisha De-Butts, Samuel Baker and Ennals Martin.

NOTE ON THE ASSAY OF RED CINCHONA BARK.[1]

By William Partridge.

In the official process of the 1898 British Pharmacopœia for the assay of *Cinchonæ rubræ cortex,* the alkaloids were extracted from the bark by mixing 20 Gm. of the powdered sample with 6 Gm. of calcium hydroxide and 20 Cc. of water. After standing for an hour or two, the resulting moist powder was boiled with benzolated amylic alcohol under a reflux condenser, submitted to two further similar extractions, and then percolated with still more benzolated amylic alcohol.

Benzolated amylic alcohol quickly extracts cinchona alkaloids from a simple aqueous suspension, but from a mixture of bark, calcium hydroxide and water, their extraction is an extremely tiresome process.

In the 1914 edition of the British Pharmacopœia, the same amount (6 Gm.) of calcium hydroxide is mixed with half the quantity (10 Gm.) of powdered bark and slightly more (22 milliliters) water. The result is a paste. Into this 130 milliliters of benzolated amylic alcohol are added, the coherency of the paste is enhanced,

[1] Reprinted from *The Analyst,* March, 1919.

and it appears to be almost undisturbed by the boiling of the solvent. If the boiling be stopped, and the plastic mass be separated into particles with a glass rod, it only requires a gentle rotation of the flask to bring the wet powder to an almost immobile mud again. Subsequent extractions with fresh quantities of the boiling solvent do little to granulate the mud, and after as many as twelve or fourteen percolations the mass is not completely exhausted of alkaloids.

It is better to reduce the amount of water; approximately 12 Cc. of this gives, with 10 Gm. of powdered bark and 6 Gm. of calcium hydroxide, a powder of the right consistency. Using this proportion of water, higher contents of total alkaloids were obtained on three occasions, the increases being respectively 2.02, 1.16 and 1.46 per cent. above the amounts found when the pharmacopœial instructions were followed. All the same, the process remains very tedious.

That the Pharmacopœial Revision Committees have retained Squibb's process (with different modifications) through the 1885, 1898 and 1914 editions, seems to imply a special confidence in it; but as at present described I, at any rate, have not been able to obtain satisfactory results with it.

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Bedford Row, W.C.I., London.

THE DETERMINATION OF ZINC AND COPPER IN GELATIN.[1]

By George S. Jamieson.

One method used for the determination of zinc and copper in gelatin is based upon the complete destruction of the organic matter by digestion with nitric and sulphuric acids.[2] After the digestion is completed, water is added, and the solution is made slightly alkaline with ammonium hydroxide. Then a measured quantity of hydrochloric acid is added. The copper is precipitated as sulphide and filtered. The filter containing the copper sulphide is digested with nitric and sulphuric acids until a colorless solution is obtained. The copper is finally titrated by the well-known iodide and thiosulphate method. When the hydrogen sulphide has been removed

[1] Reprinted from *Jour. of Ind. and Engr. Chem., April,* 1919. Published by permission of the Secretary of Agriculture.

[2] Methods of analysis, A. O. A. C., 1916, 175.

from the filtrate containing the zinc, ammonium chloride is added along with ammonium hydroxide to make the solution alkaline. Enough hydrochloric acid is added to render the solution acid to methyl orange. After adding a large excess of sodium or ammonium acetate, the zinc is precipitated with hydrogen sulphide and filtered. The zinc sulphide is dissolved in hydrochloric acid and the resulting filtrate is boiled to remove the hydrogen sulphide. A small amount of ferric chloride is added and a basic acetate precipitation is made in the usual manner in order to separate any phosphates present from the zinc. The zinc is precipitated from the filtrate as sulphide and after filtration is ignited to the oxide. It is well known that the digestion of gelatin with nitric and sulphuric acids requires almost constant attention during the entire process which generally takes two hours, and sometimes longer for completion. In addition to the digestion, the long analytical procedure makes the method unsatisfactory.

Several years ago C. R. Smith decomposed gelatin with hydrochloric acid in connection with the determination of arsenic[2] and suggested that this method of decomposing gelatin could be used to advantage for the determination of the other metals in place of the tedious digestion process. Mr. Smith and a number of other chemists have employed the hydrolysis method for the determination of zinc and copper in gelatin. Since the method of separating the zinc from the hydrolyzed solution is somewhat different from that employed in the digestion method, it will be briefly described. A small amount of magnesia mixture and an excess of sodium phosphate solution are added along with enough ammonium hydroxide to make the hydrolyzed gelatin solution alkaline. Then the zinc and copper are precipitated together as sulphides and filtered. The crystalline precipitate of ammonium magnesium phosphate serves to collect the metallic sulphides so that they can be readily filtered. The precipitate is treated with a cold solution of 1 : 10 hydrochloric acid which has been saturated with hydrogen sulphide in order to dissolve the zinc sulphide and leave the copper sulphide on the filter. The zinc and the copper are determined as described above.

It is believed that the following method will be found much simpler than those now used. The size of the sample taken for analysis varies from 20 to 50 Gm., according to the amount of zinc and copper present. The samples are weighed into 500 Cc. beakers and

treated with 100 Cc. of water and 15 to 30 Cc. of hydrochloric acid, depending upon the amount of gelatin taken for analysis. The covered beakers are heated for an hour or two on the steam bath. During the first part of the heating, the solutions are agitated several times in order to loosen any lumps adhering to the bottom of the beakers. After hydrolysis the solutions are made very slightly alkaline with ammonium hydroxide and allowed to cool to about 40° C. Then hydrogen sulphide is passed into the solutions for 2 min. While passing in the hydrogen sulphide, the solutions should be stirred several times with the delivery tube in order to facilitate the separation of the sulphides in the form most suitable for filtration. When the sulphides have settled for about 10 min., they are filtered on a 9 Cm. filter and washed several times with a very dilute solution of colorless ammonium sulphide. The wash solution is prepared by passing hydrogen sulphide for several minutes into 250 Cc. of water which contains 0.5 Cc. of 1 : 1 ammonium hydroxide. In the case of high-grade gelatin it is recommended that about 2.5 Mg. of iron should be added to the hydrolyzed gelatin before making the solution alkaline. It is found that ferrous sulphide greatly facilitates the precipitation and the filtration of small quantities of zinc and copper sulphides. The iron is conveniently added in the form of a standard solution which contains 2.49 Gm. of ferrous sulphate in 1,000 Cc. (1 Cc. = 0.5 Mg. of iron). If the directions given above are closely followed in making the hydrolyzed gelatin solution very slightly ammoniacal, there is no danger of leaving any weighable amount of copper sulphide dissolved in the ammonium sulphide in the filtrate. The sulphides are dissolved by pouring a small quantity of very hot 1 : 1 nitric acid around the upper edges of the filters. The filters are washed very thoroughly with water at room temperature. The filtrate is evaporated with 10 Cc. of 1 : 3 sulphuric acid until all the nitric acid is expelled. When the sulphuric acid is cool, 30 Cc. of water are added, and the solution is filtered to remove the silica. The filtrate, which should have a volume of about 100 Cc. is warmed to about 50° C. and hydrogen sulphide is passed into the solution for at least 5 min. in order to precipitate the copper completely. The copper sulphide is filtered on a Gooch crucible and washed with hot water saturated with hydrogen sulphide. During the filtration and washing of the precipitate a very gentle suction is employed, otherwise there is the danger of having some of the copper sulphide pass through the

crucible. When the washings have thoroughly drained, the Gooch crucible is placed inside of a porcelain crucible and dried over a small flame for a few minutes. Then the flame is gradually increased to its capacity. At this point the outer crucible is removed and the Gooch crucible heated directly in the oxidizing part of the flame for 15 min. After cooling and weighing, the crucible is heated again as hot as possible for 5 min. more in order to be certain that all the copper is converted into the oxide. The filtrate containing the zinc is heated until the hydrogen sulphide is expelled. After adding about 5 Cc. of ammonia in excess of that required to neutralize the sulphuric acid in the solution, 15 Cc. of 50 per cent. formic acid are added and a rapid stream of hydrogen sulphide is passed into the solution for 5 min. to precipitate the zinc sulphide. It is important to stir the solution with the delivery tube while passing in the hydrogen sulphide until the larger part of the zinc is precipitated. The solution containing the zinc sulphide is heated on the steam bath for about half an hour. The zinc sulphide is filtered on a Gooch crucible and washed with a 2 per cent. solution of ammonium thiocyanate. During the filtration and washing of the precipitate, it is best to use either no suction or at most a very slight suction. When all of the precipitate is in the crucible and the wash solution has largely run through, the suction is increased until it is sufficient to drain the crucible properly. The zinc sulphide is dried and ignited to convert it into the oxide in the same manner as the copper sulphide is treated. After weighing, the crucibles containing the oxides of zinc and copper are treated with hydrochloric acid, thoroughly washed with water, and ignited in order to prepare them for subsequent analyses.

Several samples of commercial gelatins of various grades were analyzed by the hydrolysis method described above as well as by the digestion method for the sake of comparison. In the digestion analyses it should be noted that the copper was determined by weighing the oxide in place of the volumetric method given above. Also the zinc was precipitated as sulphide in the presence of ammonium formate and formic acid instead of ammonium acetate and acetic acid.

In conformity to the usual custom, the results of the analyses are stated in terms of milligrams of metal per kilo of gelatin or parts per million.

No.	Hydrolysis Method.		Digestion Method.	
	Cu P.p.m.	Zn P.p.m.	Cu P.p.m.	Zn P.p.m.
1	...	1341.0	...	1341.0
1	...	1341.0	...	1340.0
1	...	1341.0	...	...
2	...	126.0	...	122.0
2	...	128.0	...	...
3	32.0	96.4	32.0	96.4
3	26.6	104 0	32.0	96.4
4	20.0	64.0	20.0	68.0
4	24.0	56.0	20.0	56.0
5	24.0	77.9	24.0	80.3
5	22.4	80.3	24.0	80.3
5	20.0	80.3	...	76.0

The copper was separated but was not determined in samples 1 and 2 because at first it was intended only to investigate the determination of zinc.

In order to test the method further, measured quantities of standard solutions of zinc and copper were added to weighed amounts of sample 5. The hydrolysis and analyses were made as described above with the following results:

Sample Taken, Grams.	Cu Added, Mg.	Zu Added, Mg.	Cu Found, Mg.	Zu Found, Mg.
20	2.5	2.8	2.5	2.7
20	3.0	3.1	3.1	3.2
20	2.5	4.7	2.4	4.7
20	2.0	3.1	1.9	3.2

It should be observed that the amount of zinc and copper in 20 Gm. of sample 5 gelatin as determined by averaging the results obtained by previous analysis, has been deducted from the results given above. The results obtained with these analyses show that the method is accurate.

In order to obtain satisfactory results, it is most important that the directions be followed in every detail. Furthermore, great care must be taken to eliminate by filtration any non-volatile matter which may separate during the course of the analyses, before proceeding to make the final precipitation of the zinc or copper sulphides. Also, the Gooch crucibles used must be prepared so that they will not lose weight during the filtration and ignition of the sulphides.

BUREAU OF CHEMISTRY,
DEPARTMENT OF AGRICULTURE,
WASHINGTON, D. C.

SCAMMONY AND ITS SUBSTITUTES.[1]

By W. L. Scoville.

There was recently received from a New York broker a sample of a Mexican plant known as *Resina drastica,* with the statement that several hundred pounds of it were available, and asking for an offer for the lot. The drug so closely resembled that known as Mexican scammony, *Ipomœa orizzabensis,* as to be mistaken for that drug on quick inspection by our botanist.

On extracting the ground drug with alcohol it was immediately evident that something different from Mexican scammony was at hand, for the percolate was a deep yellow in color, and when it was concentrated and poured into acidulated water a bright lemon-yellow resin was obtained. This resin amounted to 19.2 per cent. of the drug taken. The alcoholic solution showed 23.5 per cent. of total extractive from the drug.

A comparison of the chemical characters of the resin with true resin of scammony, *Convolvulus scammonia,* and with the resin of Mexican scammony disclosed the following:

	Resin of Scammony.	Resin of Mexican Scammony.	Resin of *Resina drastica*
Yield, per cent.	About 8	9 to 20	19.2
Color	Yellowish-brown	Straw	Lemon-yellow
Ash	Practically none	Practically none	Practically none
Solubility in			
Petroleum ether	3.5 per cent.	2.5 per cent.	1.0 per cent.
Ether	Soluble	Soluble	72.6 per cent.
Acetic ether	Soluble	Soluble	Soluble
Chloroform	Cloudy soln.	Cloudy soln.	94 per cent.
10 per cent. ammonia	Cloudy soln.	Cloudy soln.	Cloudy soln.
10 per cent. potassium hydroxide solution	Cloudy soln.	Cloudy soln.	Cloudy soln.
Acid number	20	23.5	28.0
Saponification number	198	140	136
Optical rotation	— 17.3	— 24.8	— 32.4
Color with $FeCl_3$	Dark green	Faint green	Dark green

The optical rotation of true scammony resin obtained from the root is reported by P. Guigues to vary from — 18° 31′ to — 23° 30′ and the upper limit of natural scammony resin as — 25°. Resins having a rotation of — 23° to — 25° are considered to be derived from *Ipomœa orizabensis.*

The resin of *Resina drastica* is less soluble in ether and in chloro-

[1] Reprinted from *Jour. Ind. and Engr. Chem.,* April, 1919.

form than is true scammony resin or the Mexican scammony resin. It is more slowly soluble in alkalies than is true scammony resin, as also is that of the Mexican scammony. All three gave markedly cloudy solutions in ammonia and in potassium hydroxide solution, but the insoluble portions were so fine that the solution passed through an analytical filter without clearing and without collecting an appreciable residue on the filter. Acidulating the alkaline solutions did not precipitate the resin in any case.

The alcoholic solution of *Resina drastica* reduced Fehling's both before and after heating with weak sulphuric acid. It is thus uncertain whether the resin has a glucosidal character or not.

The supply was limited and a separation plan could not be carried out.

In general character, this resembles both true and Mexican scammony resins. It is slightly more acid and is more strongly levorotatory. Its color alone would distinguish it, and treatment with decolorizing charcoal does not take out the color appreciably. When freshly precipitated it has an agreeable tea-like odor which disappears on drying. Probably a small amount of volatile oil is present in the drug. The powdered resin resembles scammony resin in odor.

The special distinguishing features of the three resins are: (1) The brownish color of true scammony resin, and the very deep green color which it gives with iron salts, (2) the light color of Mexican scammony resin, producing a colorless alcoholic solution, and giving almost no color with iron salts and (3) the deep lemon-yellow color of the *Resina drastica*.

The iron test distinguishes quite sharply between true and Mexican scammony when a ferrous salt is used. If 0.5 Gm. of the resin be dissolved in 10 mils of alcohol and 0.5 mil of a 10 per cent. aqueous solution of ferrous sulphate added, the Mexican scammony resin shows only a very faint green while the others become dark green and on standing deposit a dark mass, leaving an olive-green supernatant liquid.

Subsequent efforts to obtain another sample of the *Resina drastica* for botanical study have failed, though samples of drugs having a different character were sent. It seems probable that several botanical species, closely allied, are seeking a market as scammony or scammony substitutes.

LABORATORY OF PARKE, DAVIS & COMPANY,
DETROIT, MICH.

THE USE OF ORTHO-TOLIDINE AS A COLORIMETRIC TEST FOR GOLD.[1]

By W. B. Pollard.

Ortho-tolidine dissolved in dilute acetic acid was suggested by E. B. Phelps[2] as a delicate color test for free chlorine in water. This test was modified by J. W. Ellms and S. J. Hauser,[3] who showed that a hydrochloric acid solution of ortho-tolidine was better adapted for the purpose. Their reagent was prepared by dissolving one Gm. of ortho-tolidine in a liter of 10 per cent. hydrochloric acid.

The reagent in its modified form has now been found to be a delicate test for aurichloric acid. A solution of 1 part of gold in a million parts of water gave a bright yellow color on addition to 1 Cc. of the reagent. With a solution containing 1 part of gold and 20 million parts of water the yellow color can just be detected in a depth of 10 Cm. of liquid.

Ellms and Hauser found that in the case of dilute solutions containing free chlorine the color took about three minutes to fully develop, and was then permanent for about half an hour, after which it slowly faded. This was also found to be the case with aurichloric acid.

In making the test large amounts of strong mineral acid should not be present as the reaction becomes less delicate.

The following metals when present as chlorides in a dilute hydrochloric acid solution, were found to give no reaction with ortho-tolidine: Al, Sb (ic), Ba, Bi, Cd, Ca, Cr, Co, Cu, Ir, Pb, Mg, Hg, Mn (ous), Ni, Pt, K, Rh, Na, Sr, Sn (ic), U and Zn.

In a second paper Ellms and Hauser point out that iron in the ferric condition also reacts with ortho-tolidine. The author found that in the case of ruthenium a yellow color was also formed. Osmic acid gives a yellow color, but this changes to a green on standing. Vanadates acidified with dilute hydrochloric acid give a reaction. Molybdates acidified with hydrochloric acid do not react.

Sodium tungstate acidified with dilute hydrochloric acid gives a precipitate on addition of ortho-tolidine, but no yellow color develops.

[1] Reprinted from *The Analyst*, March, 1919.

[2] Bulletin No. 1, Ohio State Board of Health, January, 1913.

[3] *Analyst*, 1914, 39, 454.

In preparing standard chlorine solutions, Ellms and Hauser found that it was necessary to employ specially purified distilled water.

This was not found to be so necessary in the case of gold solutions. The more dilute gold solutions should, however, only be prepared when required, and should contain a small amount of free hydrochloric acid.

In testing solutions which have been obtained by the use of aqua regia, special care should be taken to guard against the possible presence of free chlorine, or of nitrous acid. The latter not only reduces gold solutions, but gives a yellow color with ortho-tolidine. Any reagents used should always be tested for reducing impurities; thus, on one occasion a sample of "pure" ammonium chloride completely reduced a weak gold solution.

In presence of much copper a green color is obtained instead of a pure yellow; colorimetric comparison can, however, still be made if the standard gold solution is tinted with copper to a similar extent.

GOVERNMENT ANALYTICAL LABORATORY,
CAIRO.

THE MANUFACTURE OF PHARMACEUTICAL PRODUCTS IN FRANCE.[1]

That French manufacturers of pharmaceutical products are confronted with the same problems and difficulties as their British *confrères* is disclosed in a well-informed article by Monsieur A. Detoeuf in the February issue of *Chimie et Industrie*.

In discussing the future of this industry, M. Detoeuf states that the pre-war idea that the French were tributaries to Germany for the greater part of their pharmaceutical products did not quite correspond to reality. He points out that two distinct classes must be recognized among medicinal products, based on the existence or non-existence of patents and trade-marks which enable the manufacturer to defend his products against competition. The French patent law of 1844 at present in force excludes medicinal products, but in practice this restriction is often overcome by taking out a

[1] Reprinted from *The Journal of the Society of Chemical Industry*, April 20, 1919.

process patent to cover the preparation of a substance which is the eventual "raw" material of a medicinal derivative; and with regard to the trade-mark, it is well recognized that a simple denomination authorized for pharmaceutical products, which is renewable indefinitely, confers on its possessor an equally indefinite proprietary right.

By reason of these prerogatives there are two clearly defined classes of medicinal products: (1) Those not protected by any mark and of which the manufacture has either never been covered by patents, or is now protected by patents; (2) those put on the market under a mark and of which the manufacture is also protected by patents.

1. Practically all these products are listed in the official Pharmacopœia, and a large proportion of them was made in France before the war. Among the products belonging to mineral chemistry we find such important substances as potassium permanganate, corrosive sublimate and the bichromates of potassium and sodium. The manufacture of saccharin requires large quantities of permanganate, and this must be produced in sufficient quantity to meet all future requirements. Small quantities of corrosive sublimate have been made in France, although the manufacture depends, apart from the supply of mercury, on the available quantities of chlorine. No doubt the electrolytic works, now free from war restrictions, will soon be equal to meeting the entire home consumption. Bichromates constitute a very necessary raw material for the manufacture of many products, and a trial factory has been established in France during the war. This requires patent development in order to free France from foreign influence.

The following organic products—and these constitute the majority—were not made in France before the war, or were made in works now destroyed:—Chloral, valerianic acid and valerianates, monochloracetic acid, oxalic acid and oxalates, phosgene, urea, morphine, codeine and derivatives, phenol, guaiacol and salts, benzoic acid and benzoates, saccharin, phthalic acid and phenolphthalein. With the exception of morphine and its derivatives and chloral (which were not manufactured for special reasons), all the other products named have been manufactured in France during the war. It cannot be said, however, that these have yet been produced under the most economic conditions, and it is therefore uncertain if the manufacture can be maintained. The production of

nearly all these organic products depends upon a cheap supply of primary materials, such as mineral acids, caustic alkalis and chlorine. These materials are likewise used in the manufacture of aniline colors and synthetic perfumes, and it is in this whole field that development is needed, for the production of pharmaceutical products is only auxiliary to the manufacture of dyes.

It was principally from the German chemical dye works that pharmaceutical products were issued before the war. One great service which the war has rendered to France (and incidentally to Great Britain) is that it has made both nations producers of these primary materials at first hand. The factories that have produced for war must now produce for peace. Works that can produce electrolytic chlorine cheaply will be best able to make chloral, monochloracetic acid, benzoic acid and phosgene. The present makers of benzene and phenol can turn out guaiacol and its derivatives most successfully. From cyanamide, urea can be obtained; from toluene, saccharin; from naphthalene and oleum, phthalic acid; from amyl alcohol, valerianic acid; and so on.

But although it is necessary to encourage by all possible means the development of chemistry in France, it is no less indispensable to warn manufacturers that pharmaceutical products cannot be produced with a small plant and scant material. They require a perfected plant, the processes must be scrupulously attended to, and above all there must be facilities for disposing of the by-products to good account. "One does not manufacture a pharmaceutical product," says M. Detoeuf, "one manufactures all the products appertaining to the same series and dependent on the same crude material."

2. It was by means of trade-marked or patented medicinal preparations that the Germans formerly invaded the French market. With the German manufacturer every new organic or mineral derivative was a potential material for a medicament. Intensive research in the factory laboratories and systematic experiment in their laboratories of therapeutic physiology, enabled them to recognize to a certainty such products as were endowed with special therapeutic activity. The process of manufacture was then patented in Germany, and if possible in France, no mention being made of therapeutic properties. Then the product was put on the market under cover of a *marque déposée* and introduced to medical men.

The pre-war attitude of the French manufacturer was that if the German product had a small sale he left it alone. If, on the contrary, the sale developed the French manufacturer produced a preparation of the same chemical composition and put it on sale either under its chemical name or under another name chosen by himself. In every case the use of the German trade-mark was denied him as constituting an international industrial property. This explains why before the war only such products which could by their popularity justify the expense and risk of their production were manufactured in France.

Among the more important of the organic or mineral products sold under a German mark were: Adalin, anæsthesin, antipyrine, aristol, aspirin, atophan, bismon, bornyval, bromipin, bromural, citrophen, collargol, creosotal, dermatol, dionin, diuretin, euquinine, helmitol, heroin, lactophenin, luminal, lycetol, lysol, salvarsan and neosalvarsan, novocain, orthoform, phenacetin, protargol, pyramidon, salophen, somatose, sulphonal, trional, urotropin, veronal, xeroform. Of these all except anæsthesin, atophan, bismon, bornyval, citrophen, phenacetin, salophen, somatose, sulphonal and trional, are now made in France.

In suppressing German competition, the war has made it comparatively easy to launch on the market, under a new trade-mark name, certain of these products which are still in demand among medical men. On the other hand, some French manufacturers before the war were able to secure by judicial action that certain marks which had become the usual name of the product (for instance, antipyrine, pyramidon, etc.) should be put into general use.

Two ways are open to French manufacturers: either they can reproduce chemically the German products and face the competition, or they may build up new compounds of proved therapeutic properties and place them before the medical profession. The difficulties of the task must not be overlooked. Well-equipped laboratories are necessary, manned by chemists trained to research, particularly in organic chemistry, and, above all, the possibilities of physiological experiment must be attended to. On the other hand, the industry in pharmaceutical products sold under a trade-mark requires usually but a small, though perfect, plant, and there is less risk of such trade being submerged by the dye and synthetic perfume industries.

M. Detoeuf's illuminating review of the situation shows quite

clearly that the question of the manufacture of pharmaceutical products is not so simple or so attractive as is often believed. Newcomers, he says, will find themselves very quickly in the presence of difficult situations, and bitter competition awaits them, both at home and abroad. It is imperative, he concludes, that the laws now under consideration regarding patents and trade-marks should ensure to these manufacturers sufficient guarantees for their enterprise without harm to the general interest. It is also necessary that they should be kept well informed of everything that is being done at home and abroad, and that official science should support them openly and without expectation of immediate reward. Finally, as the pharmaceutical industry, like other industries, has given the state all possible assistance during the war, it is the duty of the state to protect it now.

STANDARDIZING DISINFECTANTS.[1]

Dr. Samuel Rideal communicates to the *British Medical Journal* the following details of the standard bacteriological test (Rideal-Walker Method) adopted by the members of the British Disinfectant Manufacturers' Association: Well shake the bottle or other vessel containing the disinfectant before proceeding to make the dilution. Make a 1 per cent. stock emulsion (5 Cc. of disinfectant added to 495 Cc. of boiled distilled water of 15° C. to 18° C.). From this stock emulsion prepare required dilutions in boiled distilled water, taking care that pipettes used for preparing stock emulsion as well as dilutions are, after emptying, always well washed out with and into the diluent, and that all dilutions, including stock emulsion, are well shaken before use. To 5 Cc. of a particular dilution add 0.2 Cc. (5 drops) of a broth culture of *B. typhosus* grown for twenty-four hours at 37° C. Shake immediately after medication. Keep medicated tubes at temperature of 10° C. to 18° C. and take subcultures into 5 Cc. broth every two and a half minutes up to ten minutes. Incubate for a least forty-eight hours at 37° C. Rideal and Walker, (*J. S. I.*, October, 1903, p. 424), use as stock organism *B. typhosus* from a single colony on an agar plate culture that has been grown at 21–22° C. from two to seven days and removed by weekly transference for several uninterrupted genera-

[1] Reprinted from *The Chemist and Druggist*, April, 1919.

tions from the original source (the human body). Owing to the extremely important influence which the broth has on the characteristics of the *B. typhosus* employed as the test organism in the Rideal-Walker test, *particularly as regards the peptone,* attention is drawn to the fact that this is prepared according to the following modification of the formula of Dr. S. Rideal (Fourteenth International Congress for Hygiene and Demography, Berlin, 1907):

Lemco, 20 Grams. Peptone (Allen & Hanbury's "Eupepton") 20 Grams. Sodium chloride, 10 Grams. Water to 1 liter. Boil the mixture for thirty minutes, neutralize with normal caustic soda (phenolphthalein indicator), add 15 cubic Centimeters of normal hydrochloric acid; make up to 1 liter with distilled water, filter, and finally sterilize.

The culture employed must conform with the requirements laid down by the authors of the test (*v. Lancet,* September 25, 1915, p. 717)—viz., "Life in two and a half minutes and five minutes and no life thereafter," with "phenol dilutions not higher than 1:110 or lower than 1:90."

ANNOUNCEMENTS.

THE UNITED STATES PHARMACOPŒIAL CONVENTION OF 1920.

Article VIII, Chapter I of the By-Laws of the United States Pharmacopœial Convention provides that the president:

"shall issue, on or about the first of May of the year immediately preceding that of the decennial meeting, a notice inviting the several bodies, entitled under the Constitution to representation therein, to send delegates to the next meeting. He shall repeat the notification eight months later, and shall request the medical and pharmaceutical journals of the United States to publish the call for said meeting."

Article II of the Constitution provides:

"The members of the United States Pharmacopœial Convention, in addition to the Incorporators and their associates, shall be delegates elected by the following organizations in the manner they shall respectively provide: Incorporated medical colleges, and medical

schools connected with incorporated colleges and universities; incorporated colleges of pharmacy, and pharmaceutical schools connected with incorporated universities; incorporated state medical associations; incorporated state pharmaceutical associations; the American Medical Association, and the American Chemical Society; provided that no such organization shall be entitled to representation unless it shall have been incorporated wihin and shall have been in continuous operation in the United States for at least five years before the time fixed for the decennial meeting of this corporation."

Section II of the Constitution provides:

"Delegates appointed by the Surgeon-General of the United States Army, the Surgeon-General of the United States Navy, and the Surgeon-General of the United States Marine-Hospital Service, the Secretary of Agriculture, the Secretary of Commerce and Labor, the Association of Official Agricultural Chemists, the Associations of State and National Food and Dairy Departments, the National Wholesale Druggists Association, and the National Dental Association, and by the organizations not hereinbefore named which were admitted to representation in the Convention of 1900, shall also be members of the corporation. Each body and each branch of the United States Government above mentioned shall be entitled to send three delegates to the meetings of this corporation. But no such delegates as are provided for in this article shall be members until their credentials shall have been examined and acted upon as provided for by the By-Laws."

In the discharge of the above required duties, I hereby ask all competent and designated bodies and authorities to name and issue credentials to the fixed number of delegates to the tenth decennial Convention to meet in Washington, D. C., on the second Tuesday of May, 1920, at 10 o'clock a.m. at a hall to be designated hereafter. The appointed delegates are requested to promptly forward their credentials to Noble P. Barnes, M.D., The Arlington Hotel, Washington, D. C., assistant secretary of the Convention, who will file them for consideration of the Committee on Credentials which will be appointed by the president not later than March first, 1920, according to the requirements Chapter VII, Article I of the By-Laws.

Done at Washington, D. C., May 5, 1919.

HARVEY W. WILEY,

President of the United States Pharmacopœial Convention.

A GRANT FOR RESEARCH.

The American Pharmaceutical Association has available a sum amounting to about $240.00 which will be expended during 1919–1920 for the encouragement of research. This amount either in full or in fractions will be awarded in such manner as will in the judgment of the A. Ph. A. Research Committee produce the greatest good to American pharmaceutical research.

Investigators desiring financial aid in their work will communicate before August first with H. V. Arny, Chairman A. Ph. A. Research Committee, 115 W. 68th St., New York, giving their past record and outlining the particular line of work for which the grant is desired.

The committee will give each application its careful attention and will make recommendations to the American Pharmaceutical Association at its meeting in New York, August 25–29, 1919, when the award or awards will be made.

PHILADELPHIA DRUG EXCHANGE APPEALS FOR REDUCTION IN THE NUMBER OF NARCOTIC DRUG FORMULÆ.

At a meeting of the board of directors of the Philadelphia Drug Exchange held on May 14, 1919, a motion was passed directing the secretary to communicate with the American Drug Manufacturers Association and other drug manufacturing bodies, calling attention to the apparently needless multiplication in the price lists of manufacturing pharmacists of narcotic drug formulas of many unnecessary strengths, urging that the number be minimized to the fewest possible units, so that the burden of making out the federal and state narcotic reports be reduced to the lowest possible limit.

Thus, for example, in the price list of a prominent manufacturer there are of hypodermic tablets of morphine, plain and combined, 37 strengths; of heroin, 5 strengths; of diacetylmorphine, 4 strengths; of codeine, 6 strengths; of cocaine, 8 strengths. There are 72 items in the list of hypodermic tablets subject to the Harrison law. In the same list, under tablet triturates there are 99 items; under compressed tablets, 43 items; under chocolate coated tablets, 54 items; under dispensary tablets, 8 items; under pills, 49 items; a total in

all of 385 items, and this does not include elixirs and other forms of galenicals, nor the items of the price lists of other manufacturers not mentioned in the list referred to. Hence, it is apparent that druggists are compelled to stock and report upon hundreds of narcotic preparations, many of which could be eliminated from the lists and the burden of the wholesaler and retailer lightened.

We respectfully ask, therefore, that the members of your organization give consideration to the desirability of standardizing the lists of the preparations referred to by minimizing the number of items of narcotic products to the end that the details of keeping narcotic records may be simplified and time and work saved.

Of course, we realize that there are trade demands which necessitate the listing of many narcotic products, but we believe that there is a marked tendency in the medical profession towards the much-lessened use of narcotic drugs in the treatment of disease, and that the medical profession would not seriously object to the excision of many narcotic formulas from the lists, and they would not be denied the use of such narcotic drugs as they could readily have them compounded extemporaneously.

GRAND CENTRAL PALACE, NEW YORK, TO BECOME A WORLD TRADE MART.

Government to Turn Building Back to Merchants and Manufacturers Exchange.

One of the biggest enterprises to be embarked upon, having in mind the extension of American commerce in foreign countries, as well as the importation of foreign goods to America, has just been inaugurated in New York City. It is the new proposition of the Merchants and Manufacturers Exchange of New York to make Grand Central Palace a great clearing house for world commerce.

On September 30, the United States Government will turn Grand Central Palace back to the Merchants and Manufacturers Exchange. For months this great twelve-story building—the largest exposition building in the world—which occupies an entire city block, has been used as an army base hospital. Its evacuation, now taking place, will permit reconstruction of the entire interior so as to make it ideal as a permanent show place for all sorts of manufactured

products. The industries will be grouped and permanent exhibits will be made on eight spacious floors, each floor having approximately 60,000 square feet of space. The remainder of the building (the four lower floors) will be utilized for the annual expositions which have made the building famous, such as the Automobile Show, Motor Boat Show, Flower Show, Electrical Exposition, Chemical Exposition, Hotel Men's Exposition, etc.

Permanent exhibits of products of the more important industries will be opened beginning October 15. The Merchants and Manufacturers Exchange has established foreign connections for export business in every important city of the world, and manufacturers, jobbers, retail dealers, and the thousands of foreign buyers undoubtedly soon will regard Grand Central Palace as the world's great trade center and will make it their headquarters when visiting New York. Looking forward to this the management will establish club rooms, conference rooms, office facilities, etc., to increase the foreign buyers' comfort while in the metropolis.

Never before has there been such a permanent exchange conducted along international lines which will give the American manufacturer an opportunity to come into direct contact with the domestic and foreign buyer. Some of the industries represented will occupy an entire floor, such as The International Farm Tractor and Implement Exchange, the International Hardware and Homefurnishings Exchange, which will be among the first to be opened, on the sixth and seventh floors respectively. Other enterprises under way for other floors are a permanent Mining Machinery Exposition, a Railway Equipment Exposition, Textile Display, Printing Trades Exhibit, etc. The Farm Tractor Exchange and the Hardware Exchange will open on October 15, 1919. The plans of the Merchants and Manufacturers Exchange are decidedly elaborate, and in a number of ways they will afford a service to the manufacturer, jobber and dealer which has never been possible under the usual systems of merchandizing.

Through its wide representation in other countries the exchange will make its proposition known to every foreign buyer before he sails for America and acquaint him with the value of the service of the new enterprise, while in the United States and Canada the fact that the building is so well known leaves no doubt that it will be the mecca of thousands of domestic dealers and jobbers.

In spite of the fact that the building is an enormous one, space necessarily is limited and manufacturers interested in putting their products before the eyes of buyers in this highly convenient manner will have to step lively to secure space on the various floors. Only goods of proven quality and concerns of A-1 repute will be permitted to exhibit. Grand Central Palace, which is a beautiful building in itself and prior to the entry of the United States into the war, housed the largest expositions held in New York, is centrally located and most convenient to all railroads, steamship piers, hotels, theaters, and the shopping district. The march of the world's industrial progress during the reconstruction period will be largely via Grand Central Palace.

Detailed information may be obtained by addressing the Merchants and Manufacturers Exchange, 405 Lexington Avenue, New York, Room 421, prior to October 1; after that date headquarters will be in the Grand Central Palace.